	Type	L #	Hits	Search Text	DBs
1	BRS	L1	14547	microfluid$5	US-PGPUB; USPAT
2	BRS	L2	3466	1 and meter$9	US-PGPUB; USPAT
3	BRS	L3	3935	1 and dispens$9	US-PGPUB; USPAT
4	BRS	L4	1462	1 and (capillary or capillarity) near8 (force or effect)	US-PGPUB; USPAT
5	BRS	L5	505	2 and (capillary or capillarity) near8 (force or effect)	US-PGPUB; USPAT
6	BRS	L6	682	3 and (capillary or capillarity) near8 (force or effect)	US-PGPUB; USPAT
7	BRS	L7	1495	1 and (capillary or capillarity) near8 (force or effect or phenomena or phenomenon)	US-PGPUB; USPAT
8	BRS	L8	511	2 and (capillary or capillarity) near8 (force or effect or phenomena or phenomenon)	US-PGPUB; USPAT
9	BRS	L9	686	3 and (capillary or capillarity) near8 (force or effect or phenomena or phenomenon)	US-PGPUB; USPAT
10	BRS	L10	569	1 and (capillary or capillarity) near8 (force or effect or phenomena or phenomenon) with (channel or microchannel)	US-PGPUB; USPAT
11	BRS	L11	215	2 and (capillary or capillarity) near8 (force or effect or phenomena or phenomenon) with (channel or microchannel)	US-PGPUB; USPAT
12	BRS	L12	296	3 and (capillary or capillarity) near8 (force or effect or phenomena or phenomenon) with (channel or microchannel)	US-PGPUB; USPAT

	Type	L #	Hits	Search Text	DBs
13	BRS	L13	626	1 and (capillary or capillarity or surface near8 tension) near8 (force or effect or phenomena or phenomenon) with (channel or microchannel)	US-PGPUB; USPAT
14	BRS	L14	225	2 and (capillary or capillarity or surface near8 tension) near8 (force or effect or phenomena or phenomenon) with (channel or microchannel)	US-PGPUB; USPAT
15	BRS	L15	322	3 and (capillary or capillarity or surface near8 tension) near8 (force or effect or phenomena or phenomenon) with (channel or microchannel)	US-PGPUB; USPAT
16	BRS	L16	110	13 and capillary near8 stop	US-PGPUB; USPAT
17	BRS	L17	67	14 and capillary near8 stop	US-PGPUB; USPAT
18	BRS	L18	60	15 and capillary near8 stop	US-PGPUB; USPAT
19	BRS	L19	430	13 and (valve or microvalve)	US-PGPUB; USPAT
20	BRS	L20	185	14 and (valve or microvalve)	US-PGPUB; USPAT
21	BRS	L21	251	15 and (valve or microvalve)	US-PGPUB; USPAT
22	BRS	L22	282	13 and (vent or air or aeration) near8 (channel or microchannel)	US-PGPUB; USPAT
23	BRS	L23	137	14 and (vent or air or aeration) near8 (channel or microchannel)	US-PGPUB; USPAT

	Type	L #	Hits	Search Text	DBs
24	BRS	L24	176	15 and (vent or air or aeration) near8 (channel or microchannel)	US-PGPUB; USPAT

	Type	L #	Hits	Search Text	DBs
1	IS&R	L1	11303	((422/68.1,81,82,100,101,102,103) or (436/43,53,174,180)).CCLS.	US-PGPUB; USPAT
2	BRS	L2	479	1 and microfluid$9	USPAT
3	BRS	L3	978	1 and microfluid$9	US-PGPUB; USPAT
4	BRS	L4	285	3 and meter$9	US-PGPUB; USPAT
5	BRS	L5	433	3 and dispens$9	US-PGPUB; USPAT
6	BRS	L6	232	4 and (capillarity or capillary)	US-PGPUB; USPAT
7	BRS	L7	361	5 and (capillarity or capillary)	US-PGPUB; USPAT
8	BRS	L8	110	4 and (capillarity or capillary) near8 (force or effect or phenomena or phenomenon)	US-PGPUB; USPAT
9	BRS	L9	180	5 and (capillarity or capillary) near8 (force or effect or phenomena or phenomenon)	US-PGPUB; USPAT
10	BRS	L10	377	5 and (capillarity or capillary or surface near8 tension)	US-PGPUB; USPAT
11	BRS	L11	251	4 and (capillarity or capillary or surface near8 tension)	US-PGPUB; USPAT
12	BRS	L12	266	10 and (valve or microvalve)	US-PGPUB; USPAT
13	BRS	L13	196	11 and (valve or microvalve)	US-PGPUB; USPAT
14	BRS	L14	17	10 and capillary near8 stop	US-PGPUB; USPAT
15	BRS	L15	20	11 and capillary near8 stop	US-PGPUB; USPAT

	Type	L #	Hits	Search Text	DBs
16	BRS	L16	17	14 and capillary near8 stop	US-PGPUB; USPAT
17	BRS	L17	20	15 and capillary near8 stop	US-PGPUB; USPAT
18	BRS	L18	234	4 and (vent or purge or air or aeration)	US-PGPUB; USPAT
19	BRS	L19	336	5 and (vent or purge or air or aeration)	US-PGPUB; USPAT
20	BRS	L20	209	11 and (vent or purge or air or aeration)	US-PGPUB; USPAT
21	BRS	L21	218	12 and (vent or purge or air or aeration)	US-PGPUB; USPAT

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NEWS 4	JAN 16	IPC version 2007.01 thesaurus available on STN
NEWS 5	JAN 16	WPIDS/WPINDEX/WPIX enhanced with IPC 8 reclassification data
NEWS 6	JAN 22	CA/CAplus updated with revised CAS roles
NEWS 7	JAN 22	CA/CAplus enhanced with patent applications from India
NEWS 8	JAN 29	PHAR reloaded with new search and display fields
NEWS 9	JAN 29	CAS Registry Number crossover limit increased to 300,000 in multiple databases
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NEWS 11	FEB 15	RUSSIAPAT enhanced with pre-1994 records
NEWS 12	FEB 23	KOREAPAT enhanced with IPC 8 features and functionality
NEWS 13	FEB 26	MEDLINE reloaded with enhancements
NEWS 14	FEB 26	EMBASE enhanced with Clinical Trial Number field
NEWS 15	FEB 26	TOXCENTER enhanced with reloaded MEDLINE
NEWS 16	FEB 26	IFICDB/IFIPAT/IFIUDB reloaded with enhancements
NEWS 17	FEB 26	CAS Registry Number crossover limit increased from 10,000 to 300,000 in multiple databases
NEWS 18	MAR 15	WPIDS/WPIX enhanced with new FRAGHITSTR display format
NEWS 19	MAR 16	CASREACT coverage extended
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NEWS 22	MAR 30	RDISCLOSURE reloaded with enhancements
NEWS 23	APR 02	JICST-EPLUS removed from database clusters and STN
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NEWS 25	APR 30	CHEMCATS enhanced with 1.2 million new records
NEWS 26	APR 30	CA/CAplus enhanced with 1870-1889 U.S. patent records
NEWS 27	APR 30	INPADOC replaced by INPADOCDB on STN
NEWS 28	MAY 01	New CAS web site launched
NEWS 29	MAY 08	CA/CAplus Indian patent publication number format defined
NEWS 30	MAY 14	RDISCLOSURE on STN Easy enhanced with new search and display fields
NEWS EXPRESS		NOVEMBER 10 CURRENT WINDOWS VERSION IS V8.01c, CURRENT MACINTOSH VERSION IS V6.0c(ENG) AND V6.0Jc(JP), AND CURRENT DISCOVER FILE IS DATED 25 SEPTEMBER 2006.
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=> s microfluid?
L1       21297 MICROFLUID?

=> s l1 and meter? or dispens? or load? or expell? or transfer?
L2     2997378 L1 AND METER? OR DISPENS? OR LOAD? OR EXPELL? OR TRANSFER?

=> s l1 and (meter? or dispens? or load? or expell? or transfer?)
L3        2467 L1 AND (METER? OR DISPENS? OR LOAD? OR EXPELL? OR TRANSFER?)

=> s l3 and (capillarity or capillary)
L4         413 L3 AND (CAPILLARITY OR CAPILLARY)

=> s l4 and (capillarity or capillary) (8w) (force or effect or phenomenon or
phenomena)
L5          58 L4 AND (CAPILLARITY OR CAPILLARY) (8W) (FORCE OR EFFECT OR
               PHENOMENON OR PHENOMENA)

=> s l4 and (capillarity or capillary or surface (8w) tension) (8w) (force or
effect or phenomenon or phenomena)
L6          59 L4 AND (CAPILLARITY OR CAPILLARY OR SURFACE (8W) TENSION) (8W)
               (FORCE OR EFFECT OR PHENOMENON OR PHENOMENA)

=> s l3 and (capillarity or capillary or surface (8w) tension)
L7         453 L3 AND (CAPILLARITY OR CAPILLARY OR SURFACE (8W) TENSION)

=> s l7 and (capillarity or capillary or surface (8w) tension) (8w) (force or
effect or phenomenon or phenomena)
L8          70 L7 AND (CAPILLARITY OR CAPILLARY OR SURFACE (8W) TENSION) (8W)
               (FORCE OR EFFECT OR PHENOMENON OR PHENOMENA)

=> s l8 and (vent or air or purge or aeration)
L9           4 L8 AND (VENT OR AIR OR PURGE OR AERATION)

=> duplicate remove l8 1-70
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'N' IS NOT VALID. VALID FILE NAMES ARE 'CAPLUS, COMPENDEX, INSPEC'
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referenced by any of the L#s specified for this DUPLICATE command.
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referenced by any of the L#s specified for this DUPLICATE command.
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L10 54 DUPLICATE REMOVE L8 CAPLUS (16 DUPLICATES REMOVED)

=> display l10 1-54 ibib abs

L10 ANSWER 1 OF 54 CAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 2007:477558 CAPLUS
TITLE: Parallel Nanoliter Microfluidic Analysis System
AUTHOR(S): Andersson, Per; Jesson, Gerald; Kylberg, Gunnar; Ekstrand, Gunnar; Thorsen, Gunnar
CORPORATE SOURCE: Gyros AB, Uppsala, SE-751 83, Swed.
SOURCE: Analytical Chemistry (Washington, DC, United States) (2007), 79(11), 4022-4030
CODEN: ANCHAM; ISSN: 0003-2700
PUBLISHER: American Chemical Society
DOCUMENT TYPE: Journal
LANGUAGE: English
AB A parallel nanoliter microfluidic anal. system based on capillary action, centrifugal force, and hydrophobic barriers is described. The precision of 112 parallel volume definition operations is determined to 0.75% CV at 200 nL using the individual sample introduction structure. For 20 nL, the actual measurement error is the dominating factor, with a combined error of 1.9% CV. Individual dispensing as well as dispensing through a common distribution channel is described. The volume definition precision for the common distribution channel is 1.6% CV for 200 nL. Unlike the dominating forces in microliter-sized channel systems, the hysteresis effects are described as exerting a major effect, which needs to be considered in order to control the operation and design of discrete nanoliter fluidics. Hydrophobic patches at the corners of the rectangular channel control corner-enhanced wicking. Excellent flow control of 1 and 2 nL/s is achieved using a predefined spin program.
REFERENCE COUNT: 34 THERE ARE 34 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L10 ANSWER 2 OF 54 CAPLUS COPYRIGHT 2007 ACS on STN DUPLICATE 1
ACCESSION NUMBER: 2007:494844 CAPLUS
TITLE: Fabrication of integrated patterns using lithography and particles assembling techniques
AUTHOR(S): Shi, J.; Guo, S. S.; Sun, M. H.; Baigl, D.; Chen, Y.
CORPORATE SOURCE: Ecole Normale Superieure, 24 rue de Lhomond, Paris, 75005, Fr.
SOURCE: Microelectronic Engineering (2007), 84(5-8), 1471-1475
CODEN: MIENEF; ISSN: 0167-9317

PUBLISHER: Elsevier B.V.
DOCUMENT TYPE: Journal
LANGUAGE: English
AB This paper describes both phys. and chemical techniques of nanoparticle assembling on a substrate pre-patterned by optical lithog. or soft UV nanoimprint lithog. Integrated patterns of mono dispersed particles can be achieved by capillary forces, whereas functionalized particles could be assembled into holes of a metallic layer by chemical processing. To demonstrate the applicability of the methods, the fabricated patterns were transferred into a UV curable resist or a silicon dioxide layer by reactive ion etching. In addition, particles assembled into a microfluidic channel were used as artificial gel to show the feasibility of stretching single-strand T4 DNA mols.

L10 ANSWER 3 OF 54 COMPENDEX COPYRIGHT 2007 EEI on STN
ACCESSION NUMBER: 2007(15):21 COMPENDEX
TITLE: Reciprocating thermocapillary plug motion in an externally heated capillary.
AUTHOR: Jiao, Zhenjun (School of Mechanical and Aerospace Engineering Nanyang Technological University, Singapore 639798, Singapore); Nguyen, Nam-Trung; Huang, Xiaoyang; Ang, Yi Zhen
SOURCE: Microfluidics and Nanofluidics v 3 n 1 February 2007 2007.p 39-46
SOURCE: Microfluidics and Nanofluidics v 3 n 1 February 2007 2007.p 39-46
ISSN: 1613-4982 E-ISSN: 1613-4990
PUBLICATION YEAR: 2007
DOCUMENT TYPE: Journal
TREATMENT CODE: Theoretical
LANGUAGE: English
AN 2007(15):21 COMPENDEX
AB This paper reports the concept and experimental results of reciprocating thermocapillary motion of a liquid plug in microchannels. This paper first describes a one-dimensional analytical model for the transport of microplugs in a capillary. The model considers the coupling effect between heat transfer in the capillary wall and the surface tension driven movement of the plug. Because surface tension depends on temperature, the transient temperature distribution determines the surface tension difference across a plug and thus its movement. In the experiments, we used two heaters, which were activated alternatively. The liquid plug was positioned between the two heaters. The periodic temperature gradients generated by the two heaters made the liquid plug to move back and forth. The position of the plugs was captured and evaluated using a CCD camera. This paper presents the results of this motion with different switching frequencies, viscosities and plug sizes. This actuation concept has potential applications in postprocessing stages for droplet-based microfluidics. $CPY Springer-Verlag 2006. 18 Refs.

L10 ANSWER 4 OF 54 COMPENDEX COPYRIGHT 2007 EEI on STN
ACCESSION NUMBER: 2007(1):5549 COMPENDEX
TITLE: Advances in immunoanalysis of single cells with capillary electrophoresis.
AUTHOR: Zhang, Hua (School of Molecular Biosciences Washington State University Abelson Hall, Pullman, WA 99164-4234, United States); Tian, Shuge
SOURCE: Analytical and Bioanalytical Chemistry v 387 n 1 January 2007 2007.p 21-23
SOURCE: Analytical and Bioanalytical Chemistry v 387 n 1 January 2007 2007.p 21-23
CODEN: ABCNBP ISSN: 1618-2642 E-ISSN: 1618-2650

PUBLICATION YEAR: 2007
DOCUMENT TYPE: Journal
TREATMENT CODE: Theoretical
LANGUAGE: English
AN 2007(1):5549 COMPENDEX
AB The advances in immunoassay technologies such as high-performance immunoaffinity chromatography (HPIC), the capillary enzyme-linked immunoassay, and CE/immunoassay, for immunoanalysis of single cells are discussed. The capillary immunoassay technique employs a cell pretreatment technique, that loads the cell inside injection end of the capillary and injects fluorescein isothiocyanate (FTIC) labeled antibodies into the capillary for single cell immunoanalysis. The continuous cell detection method measures P-glycoprotein (PGP) on single K562 cells without cytolysis by injecting the cells into the capillary, controlling a gap by the capillary inlet and siphoning force, and separating the cells according to their electrophoretic abilities. Immunoassay of single cells is also detected by Laser Induced Fluorescence (LIF) with a microfluidic chip by minimizing the capillary electrophoresis onto the chip.(Edited abstract) 8 Refs.

L10 ANSWER 5 OF 54 INSPEC (C) 2007 IET on STN
ACCESSION NUMBER: 2007:9388386 INSPEC
TITLE: Nanomesh fluidic filter using self-assembly of colloidal nanospheres and surface tension
AUTHOR: Young Ho Seo (Dept. of Mech. Eng. & Mechatronics, Kangwon Nat. Univ., Kangwon-Do, South Korea)
SOURCE: Applied Physics Letters (19 March 2007), vol.90, no.12, p. 123514-1-3, 11 refs.
CODEN: APPLAB, ISSN: 0003-6951
SICI: 0003-6951(20070319)90:12L.123514:NFFU;1-N
Price: 0003-6951/2007/90(12)/123514-1(3)/$23.00
Doc.No.: S0003-6951(07)06611-9
Published by: AIP, USA
DOCUMENT TYPE: Journal
TREATMENT CODE: Practical; Experimental
COUNTRY: United States
LANGUAGE: English
AN 2007:9388386 INSPEC
AB A simple and inexpensive method of fabricating a nanofluidic filter was developed by using self-assembly of colloidal nanospheres and surface tension. Colloid plug formed by surface tension in the microchannel was evaporated, then the nanospheres in a colloid were orderly stacked by capillary force. The porosity and mean pore size of the nanomesh membrane were 45.4% and 158 nm, respectively. In the nanoindentation test with a spherical tip of 10 μm radius, the nanomesh membranes withstood the maximum mechanical loading of 26.8±2.47 mN, and the heat-treated membranes withstood 66.65±4.15 mN

L10 ANSWER 6 OF 54 CAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 2006:578213 CAPLUS
DOCUMENT NUMBER: 145:42667
TITLE: Lab-on-a-chip biosensor for an on-the-spot analysis of biological substances
INVENTOR(S): Paek, Se Hwan; Kim, Joo-Eun
PATENT ASSIGNEE(S): Biodigit Laboratories Corp., S. Korea
SOURCE: PCT Int. Appl., 37 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2006062312	A1	20060615	WO 2005-KR4084	20051201
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KZ, LC, LK, LR, LS, LT, LU, LV, LY, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NG, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SM, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW				
RW: AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, LV, MC, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG, BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM				
KR 2006064807	A	20060614	KR 2004-103462	20041209

PRIORITY APPLN. INFO.: KR 2004-103462 A 20041209

AB The present invention relates to a lab-on-a-chip version of biosensor for an on-the-spot anal. whose anal. performances were remarkably improved, by incorporating com. membranes, traditionally used for rapid diagnostics, into microfluidic channels engraved on the surface of a plastic chip, as follows: (1) reduction of sample size; (2) realization of variable functions for total anal.; and (3) transfer of medium by capillary action without the assistance of an external force. The biosensor may be used for anal. of metabolic substances, proteins, hormones, nucleic acids, cells, drugs, food contaminants, environmental pollutants or biol. weapon.

REFERENCE COUNT: 1 THERE ARE 1 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L10 ANSWER 7 OF 54 CAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 2006:193525 CAPLUS
DOCUMENT NUMBER: 144:228816
TITLE: A capillary flow control module and lab-on-a-chip equipped with the same
INVENTOR(S): Suk, Ji Won; Jang, Jae-Young; Lee, Eunjeong; Kim, Youngduk
PATENT ASSIGNEE(S): LG Chem, Ltd., S. Korea
SOURCE: PCT Int. Appl., 46 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2006022495	A1	20060302	WO 2005-KR2752	20050819
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KP, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NG, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SM, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW				
RW: AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, LV, MC, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG, BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY,				

KG, KZ, MD, RU, TJ, TM
PRIORITY APPLN. INFO.: KR 2004-66177 A 20040821
AB The present invention relates to a capillary flow control module and a lab-on-a-chip equipped with the same, and more particularly, a capillary flow control module and a lab-on-a-chip equipped with the same, which can diagnose and analyze a small amount of a sample by transferring and reacting the sample through the natural capillary flow by capillary phenomenon. The lab-on-a-chip equipped with the inventive capillary flow control module can connect a plurality of fluids by natural capillary flow without addnl. manipulation and energy through a specific design of channel configuration and diagnose and analyze two or more different samples by sequential transfer.
REFERENCE COUNT: 4 THERE ARE 4 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L10 ANSWER 8 OF 54 CAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 2006:1067028 CAPLUS
DOCUMENT NUMBER: 145:391975
TITLE: Method and disk-like microfluidic device for ELISA tests of liquid samples
INVENTOR(S): Ballhorn, Ilse; Blankenstein, Gert; Peters, Ralf-Peter; Mueller-Chorus, Birgit; Schlueter, Michael
PATENT ASSIGNEE(S): Boehringer Ingelheim Microparts G.m.b.H., Germany
SOURCE: Ger. Offen., 19pp.
CODEN: GWXXBX
DOCUMENT TYPE: Patent
LANGUAGE: German
FAMILY ACC. NUM. COUNT: 2
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
DE 102005042601	A1	20061012	DE 2005-102005042601	20050907
WO 2006108559	A2	20061019	WO 2006-EP3156	20060407
WO 2006108559	A3	20070322		

W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, LY, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NG, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SM, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW
RW: AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, LV, MC, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG, BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM

PRIORITY APPLN. INFO.: DE 2005-102005016503IA 20050409
DE 2005-102005016509A 20050409
DE 2005-102005042601A 20050907
AB The invention concerns a method and microfluidic device for the anal. of liquid samples especially by ELISA. Sample liquid and dilution liquid are introduced into dosing chambers with varying vols. in a way that the sample becomes available in various dilns. in the different reaction chambers. Reaction chambers are provided with reagents from a holding chamber. To stop the reactions, the liqs. are transfered to the detection chambers. Fluids are transfered with the help of pressure, capillary forces and centrifugal forces.
REFERENCE COUNT: 15 THERE ARE 15 CITED REFERENCES AVAILABLE FOR THIS

RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L10 ANSWER 9 OF 54 CAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 2006:1066554 CAPLUS
DOCUMENT NUMBER: 145:391972
TITLE: Method and disk-like microfluidic device for ELISA test of liquid samples
INVENTOR(S): Ballhorn, Ilse; Blankenstein, Gert; Peters, Ralf-Peter; Mueller-Chorus, Birgit; Schlueter, Michael
PATENT ASSIGNEE(S): Boehringer Ingelheim Microparts G.m.b.H., Germany
SOURCE: Ger. Offen., 11pp.
CODEN: GWXXBX
DOCUMENT TYPE: Patent
LANGUAGE: German
FAMILY ACC. NUM. COUNT: 2
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
DE 102005016509	A1	20061012	DE 2005-102005016509	20050409
WO 2006108559	A2	20061019	WO 2006-EP3156	20060407
WO 2006108559	A3	20070322		

W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, LY, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NG, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SM, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW
RW: AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, LV, MC, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG, BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM

PRIORITY APPLN. INFO.: DE 2005-102005016503A 20050409
DE 2005-102005016509A 20050409
DE 2005-102005042601A 20050907

AB The invention concerns a method and microfluidic device for the anal. of liquid samples especially by ELISA that consists of: (a) a liquid sample receiving chamber; (b) a chamber for the diluting liquid; (c) a chamber for sequentially receiving various reagents; (d) a reaction chamber that receives the sample liquid, the dilution liquid and various reagents consecutively. Fluids are transfered with the help of pressure, capillary forces and centrifugal forces.

REFERENCE COUNT: 13 THERE ARE 13 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L10 ANSWER 10 OF 54 CAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 2006:1066546 CAPLUS
DOCUMENT NUMBER: 145:391971
TITLE: Method and disk-like microfluidic device for ELISA test of liquid samples
INVENTOR(S): Ballhorn, Ilse; Blankenstein, Gert; Peters, Ralf-Peter; Mueller-Chorus, Birgit; Schlueter, Michael
PATENT ASSIGNEE(S): Boehringer Ingelheim Microparts G.m.b.H., Germany
SOURCE: Ger. Offen., 11pp.
CODEN: GWXXBX
DOCUMENT TYPE: Patent
LANGUAGE: German
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
DE 102005016508	A1	20061012	DE 2005-102005016508	20050409

PRIORITY APPLN. INFO.: DE 2005-102005016508 20050409

AB The invention concerns a method and microfluidic device for the anal. of liquid samples especially by ELISA that consists of: (a) a liquid sample receiving chamber; (b) a chamber for the diluting liquid; (c) a chamber for various reagents; (d) immobilized enzyme-containing reaction chambers that enable multiple testing; (e) detection chambers that are connected with the reaction chambers in a way that the liqs. from the reaction chambers are transfered to the detection chambers by centrifugal forces. Fluids are transfered with the help of pressure, capillary forces and centrifugal forces.

REFERENCE COUNT: 13 THERE ARE 13 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L10 ANSWER 11 OF 54 COMPENDEX COPYRIGHT 2007 EEI on STN

ACCESSION NUMBER: 2007(4):106 COMPENDEX

TITLE: Robotic implementation of a microchip-based protein clean-up and enrichment system for MALDI-TOF MS readout.

AUTHOR: Wallman, Lars (Department of Electrical Measurements Lund University, S-221 00 Lund, Sweden); Ekstrom, Simon; Magnusson, Mattias; Bolmsjo, Gunnar; Olsson, Magnus; Nilsson, Johan; Marko-Varga, Gyorgy; Laurell, Thomas

SOURCE: Measurement Science and Technology v 17 n 12 Dec 1 2006 2006.p 3147-3153

SOURCE: Measurement Science and Technology v 17 n 12 Dec 1 2006 2006.p 3147-3153, arn: S05
CODEN: MSTCEP ISSN: 0957-0233 E-ISSN: 1361-6501

PUBLICATION YEAR: 2006

DOCUMENT TYPE: Journal

TREATMENT CODE: Theoretical; Experimental

LANGUAGE: English

AN 2007(4):106 COMPENDEX

AB A capillary filling microfluidic proteomic sample processing system has been realized in an automated set-up. Chip-integrated solid-phase extraction is performed in a 96-array format followed by sequential capillary action elution into a piezoelectric microdispenser and subsequent transfer to MALDI targets. Samples are eluted and deposited in volumes of 200-300 nl. The robotic system offers calibration to user-defined microextraction arrays and MALDI-target formats at micrometre resolution. Built-in force feedback control ensures a precise and robust microchip docking/handling in three dimensions. An efficient automated washing protocol eliminates analyte carry-over. System throughput ranges typically from 50-100 samples h-1. $CPY 2006 IOP Publishing Ltd. 26 Refs.

L10 ANSWER 12 OF 54 CAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2006:473110 CAPLUS

DOCUMENT NUMBER: 145:105824

TITLE: Molecular simulations of R141b boiling flow in micro/nano channel: interfacial phenomena

AUTHOR(S): Dong, Tao; Yang, Zhaochu; Wu, Huilong

CORPORATE SOURCE: Beijing Institute of Technology, School of Mechatronic Engineering, Beijing, 100081, Peop. Rep. China

SOURCE: Energy Conversion and Management (2006), 47(15-16), 2178-2191
CODEN: ECMADL; ISSN: 0196-8904

PUBLISHER: Elsevier Ltd.
DOCUMENT TYPE: Journal
LANGUAGE: English
AB Boiling flow in microchannels provides a promising approach for electronic cooling, while the understanding of microfluidic phase transition is still very limited. Based on an annular flow model anal., non-equilibrium mol. dynamics (NEMD) simulations of the real fluid Freon R141b boiling flow in micro/nano channels were performed to investigate micro and nano scale liquid-vapor interfacial phenomena. The simulations were performed in a cuboid cell in which a temperature gradient was set at both ends, with the 2CLJD (two center Lennard-Jones potential with embedded dipole) potential selected as the potential model. The temperature distribution, heat flux, d. and surface tension profiles of the simulated cell were presented and discussed. The results show that the characteristics of the liquid-vapor interface depend heavily on the saturated temperature and the superheat degree.
REFERENCE COUNT: 28 THERE ARE 28 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L10 ANSWER 13 OF 54 INSPEC (C) 2007 IET on STN
ACCESSION NUMBER: 2006:9186069 INSPEC
TITLE: Young 4ever - the use of capillarity for passive flow handling in lab on a chip devices
AUTHOR: Eijkel, J.C.T.; van den Berg, A. (MESA+ Res. Inst., Twente Univ., Netherlands)
SOURCE: Lab on a Chip (Nov. 2006), vol.6, no.11, p. 1405-8, 28 refs.
CODEN: LCAHAM, ISSN: 1473-0197
SICI: 1473-0197(200611)6:11L.1405:Y4CP;1-9
Published by: R. Soc. Chem, UK
DOCUMENT TYPE: Journal
TREATMENT CODE: General Review
COUNTRY: United Kingdom
LANGUAGE: English
AN 2006:9186069 INSPEC
AB When we do our everyday fluid handling in the laboratory such as filling, emptying, metering and cleaning, we often don't realize that we use a set of everyday forces. These forces are gravity, suction and the capillary force. Apart from their use for fluid handling they were therefore also the first forces to be used for liquid propulsion in separation and analysis systems in the 19th and 20th century laboratory. To these everyday forces for fluid handling we could also add the centrifugal force and evaporation. The ready availability of these everyday forces makes them particularly suited for fluid handling and propulsion in diagnostics and point-of-care (POC) devices. When such systems are miniaturized, the capillary force scales the best because it is exerted at the contact perimeter of liquid and channel wall, and the perimeter becomes larger relative to the channel cross-sectional area on downscaling. The capillarity-induced pressure, which is the capillary force per unit channel area, is therefore inversely proportional to the characteristic channel dimension. Classically, paper, fabric, membranes or mesh is used for capillary propulsion and flow control. Precise flow control and metering however can be problematic in such devices and the past few years have therefore seen a surge in interest in microfluidic POC devices employing capillarity. Also outside the area of POC devices the interest in the use of capillarity in LOC devices has recently increased. This focus article attempts to give an overview of this developing field, and will show that there is still a lot of potential in the capillary phenomena described in 1805 by Young and de Laplace.

Capillarity-driven flow can with good success be used in LOC systems, especially because it scales well. The resulting autonomous or 'automatic' behaviour is of great use in POC devices, because it obviates the need for additional pumping or actuation equipment. Local changes of the channel geometries allow for complicated flow patterns and flow timing to be programmed, again without the need for external control equipment. Because of these obvious advantages, it is to be expected that capillarity will gain greater importance for LOC applications, especially if innovative device designs are produced

L10 ANSWER 14 OF 54 COMPENDEX COPYRIGHT 2007 EEI on STN
ACCESSION NUMBER: 2006(50):7081 COMPENDEX
TITLE: Compact disc (CD)-based automated animal assay.
AUTHOR: Kim, N.H. (Department of Electrical Engineering and Computer Science University of California, Irvine, Irvine, CA, United States); Dempsey, C.M.; Zoval, J.V.; Sze, J.Y.; Madou, M.J.
MEETING TITLE: 2006 NSTI Nanotechnology Conference and Trade Show - NSTI Nanotech 2006 Technical Proceedings.
MEETING LOCATION: Boston, MA, United States
MEETING DATE: 07 May 2006-11 May 2006
SOURCE: 2006 NSTI Nanotechnology Conference and Trade Show - NSTI Nanotech 2006 Technical Proceedings v 2 2006.p 550-553
SOURCE: 2006 NSTI Nanotechnology Conference and Trade Show - NSTI Nanotech 2006 Technical Proceedings v 2 2006.p 550-553
SOURCE: 2006 NSTI Nanotechnology Conference and Trade Show - NSTI Nanotech 2006 Technical Proceedings
ISBN: 0976798573; 9780976798576
PUBLICATION YEAR: 2006
MEETING NUMBER: 68707
DOCUMENT TYPE: Conference Article
TREATMENT CODE: Theoretical
LANGUAGE: English
AN 2006(50):7081 COMPENDEX
AB Space biology research requires a compact and fully automated system. The unique environment of space flight experiments has limitations of power, size, weight, and crew intervention. In order to address these needs, a compact disc (CD)-based automatic microfluidic system was developed. The long-term goal of this research is to develop an automated microfluidic rotating CD cultivation system for to determine if the space environment is influencing particular genes. Caenorhabditis elegans was exploited for this research because it is a well-studied model organism for biological and biomedical research in genetics, aging and disease. Compared to other microfluidic technologies for moving small amounts of fluidic or suspended particles from site to site, the centrifuge-based system is well suited for various microfluidic functions such as flow sequencing, mixing, capillary metering, and flow switching. Those functions can be implemented by exploiting centrifugal, coriolis and capillary forces combined with specific microfluidic network. This automated microfluidic CD culture system contains a cultivation chamber, nutrient chamber, waste chamber, channels, and venting holes. The feeding and waste removal processes were achieved automatically using centrifugal force driven fluidics. The cultivation of C. elegans was successfully carried out on the automatic microfluidic CD system. 9 Refs.

L10 ANSWER 15 OF 54 INSPEC (C) 2007 IET on STN
ACCESSION NUMBER: 2007:9280455 INSPEC
TITLE: Fabrication and application of multilayer SU-8 based micro dispensing array chip

AUTHOR: Xu Bao-jian; Jin Qing-hui; Zhao Jian-long (Shanghai Inst. of Microsyst. & Inf. Technol., Chinese Acad. of Sci., Shanghai, China)
SOURCE: Journal of Functional Materials and Devices (Oct. 2006), vol.12, no.5, p. 377-82, 9 refs.ISSN: 1007-4252 SICI: 1007-4252(200610)12:5L.377:FAMB;1-W Published by: Editorial Board, J. Funct. Mater. Devices, China
DOCUMENT TYPE: Journal
TREATMENT CODE: Experimental
COUNTRY: China
LANGUAGE: Chinese
AN 2007:9280455 INSPEC
AB The fabrication of the micro dispensing array chips was successfully completed by polymer-MEMS technology, employing three SU-8 layers without development after exposure until the end of the process. The influences of process parameters such as evenness, temperature and exposure doses on multilayer microstructures, were discussed in order to eliminate the crack, breakage and over-crosslink in the chip. The processes of fluid sample filling, delivering and dispensing can be automatically performed in the chip by capillary force of the hydrophilic micro-channel pre-treated by O2 plasma. Up to 25 individual fluid spots with the average diameters of 384 μm can be simultaneously produced onto nylon membrane with the area of 3.4 mm + 3.4 mm by the chip at a pressure of 10 kPa for 10 ms and the coefficient of variation (CK) within 25 spots is 2.6%. The CV for signal intensity within all spots in a single DNA microarray fabricated by the chip is as low as 4.5% and the CV for diameter can reach 3.2%. It shows hat the chip is suitable and practicable for microarray production and assay

L10 ANSWER 16 OF 54 CAPLUS COPYRIGHT 2007 ACS on STN DUPLICATE 2
ACCESSION NUMBER: 2006:257685 CAPLUS
TITLE: Computer aided design of an EWOD microdevice
AUTHOR(S): Berthier, J.; Clementz, Ph.; Raccurt, O.; Jary, D.; Claustre, P.; Peponnet, C.; Fouillet, Y.
CORPORATE SOURCE: Department of Technology for Biology and Health, CEA-LETI, Grenoble, 38054, Fr.
SOURCE: Sensors and Actuators, A: Physical (2006), A127(2), 283-294 CODEN: SAAPEB; ISSN: 0924-4247
PUBLISHER: Elsevier B.V.
DOCUMENT TYPE: Journal
LANGUAGE: English
AB Digital microfluidics is foreseen as a convenient way to perform biol. processes like DNA manipulation and cell anal. A promising method for droplet displacement is electrowetting on dielec. (EWOD). It has been recently shown that many basic manipulations of microdrops can be achieved in EWOD microsystems. These manipulations are imposed by the different biol. processes taking place on the biochip. The key manipulations are: microdrop dispense from a reservoir onto the microchip, droplet motion from one electrode to the next one, separation of a droplet into two daughter droplets, merging of two droplets into one unique droplet, and microdrop crossing from a covered EWOD to an open EWOD sector and vice versa. In order to optimize these manipulations and contribute to the developments of such microsystems, it is mandatory to closely understand the phys. phenomena involved in electrowetting. To do so, we have used an approach based on a numerical method using surface energy minimization, justified by the fact that capillary forces are dominant in microdrops mech. behavior. The results have led us to improve the morphol. design of an EWOD microchip. We present here the computational approach, a comparison with the exptl. results and the

consequences for the realization of an EWOD microsystem.
REFERENCE COUNT: 18 THERE ARE 18 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L10 ANSWER 17 OF 54 COMPENDEX COPYRIGHT 2007 EEI on STN DUPLICATE 3
ACCESSION NUMBER: 2006(6):1304 COMPENDEX
TITLE: Modeling, simulation, and optimization of electrowetting.
AUTHOR: Lienemann, Jan (Institute for Microsystem Technology (IMTEK) Albert Ludwig University, Freiburg 79085, Germany); Greiner, Andreas; Korvink, Jan G.
SOURCE: IEEE Transactions on Computer-Aided Design of Integrated Circuits and Systems v 25 n 2 February 2006 2006.p 234-247
SOURCE: IEEE Transactions on Computer-Aided Design of Integrated Circuits and Systems v 25 n 2 February 2006 2006.p 234-247
CODEN: ITCSDI ISSN: 0278-0070
PUBLICATION YEAR: 2006
DOCUMENT TYPE: Journal
TREATMENT CODE: Theoretical
LANGUAGE: English
AN 2006(6):1304 COMPENDEX
AB Electrowetting is an elegant method to realize the motion, dispensing, splitting, and mixing of single droplets in a microfluidic system without the need for any mechanical - and fault-prone - components. By only applying an electric voltage, the interfacial energy of the fluid-solid interface is altered and the contact line of the droplet is changed. However, since the droplet shape is usually heavily distorted, it is difficult to estimate the droplet shape during the process. Further, it is often necessary to know if a process, e.g., droplet splitting on a given geometry, is possible at all, and what can be done to increase the system's reliability. It is thus important to use computer simulations to gain an understanding about the behavior of a droplet for a given electrode geometry and voltage curve. Special care must be exercised when considering surface-tension effects. We present computer simulations done with the Surface Evolver program and a template library combined with a graphical user interface (GUI) that facilitates standard tasks in the simulation of electrowetting arrays. $CPY 2006 IEEE. 28 Refs.

L10 ANSWER 18 OF 54 CAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 2006:935021 CAPLUS
DOCUMENT NUMBER: 145:403751
TITLE: Effects on wettability by surfactant accumulation/depletion in bulk polydimethylsiloxane (PDMS)
AUTHOR(S): Seo, Jeonggi; Lee, Luke P.
CORPORATE SOURCE: Berkeley Sensor & Actuator Center, Department of Bioengineering, University of California at Berkeley, CA, 94720, USA
SOURCE: Sensors and Actuators, B: Chemical (2006), B119(1), 192-198
CODEN: SABCEB; ISSN: 0925-4005
PUBLISHER: Elsevier B.V.
DOCUMENT TYPE: Journal
LANGUAGE: English
AB Polydimethylsiloxane (PDMS) is an appealing silicone elastomer as a base material for microfluidic biomedical applications. Its ability to easily crosslink as well as its favorable phys. and chemical properties has enabled a large number of micro- and nano-cast applications. However, PDMS' hydrophobic surface can be problematic. Two methods presented here

address the wettability of PDMS by accumulating or depleting surfactant in PDMS. The surfactant in the crosslinked PDMS matrix is released and activated upon contacting with an aqueous solution and assists the solution wetting of PDMS. Wettability was enhanced as a function of surfactant concentration With the addition of 3% Triton TX-100 (a nonionic surfactant), the contact angle of deionized water on PDMS decreased up to 40° in 90 s, compared with a decrease of only 3° on unmodified PDMS. Dynamic measurements of contact angle and contact line radii showed wettability change due to the transfer of surfactant to the interface of the aqueous solution/PDMS. The stability of the modified PDMS was quantified by contact angle measurements over a 30-day duration. Immersing the modified PDMS in water for long time periods before the measurement depletes the surfactant; the resulting wettability becomes a function of immersion duration. The surface wettability can also be controlled with a function of immersion duration even after the PDMS is cured.

REFERENCE COUNT: 27 THERE ARE 27 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L10 ANSWER 19 OF 54 INSPEC (C) 2007 IET on STN

ACCESSION NUMBER: 2006:8713667 INSPEC

TITLE: Droplet ejection study of a picojet printhead

AUTHOR: An-Shik Yang; (Dept. of Mech. & Autom. Eng., Da Yeh Univ., Chang Hwa, Taiwan), Jinn-Cherng Yang; Ming-Ching Hong

SOURCE: Journal of Micromechanics and Microengineering (Jan. 2006), vol.16, no.1, p. 180-8, 32 refs.
CODEN: JMMIEZ, ISSN: 0960-1317
SICI: 0960-1317(200601)16:1L.180:DESP;1-U
Price: 0960-1317/06/010180+09$30.00
Doc.No.: S0960-1317(06)05880-3
Published by: IOP Publishing, UK

DOCUMENT TYPE: Journal

TREATMENT CODE: Practical; Theoretical; Experimental

COUNTRY: United Kingdom

LANGUAGE: English

AN 2006:8713667 INSPEC

AB The goal of this study is to explore the liquid ejection behavior for a Picojet® printhead. In the computational approach, the theoretical model adopted the transient three-dimensional conservation equations of mass and momentum. The surface tension effect at the gas-liquid boundary was treated by the continuous surface force (CSF) scheme. The volume-of-fluid (VOF) method with the piecewise linear interface construction (PLIC) technique was used to describe the behavior of interfacial movements. Experimentally, a micro-flow visualization system was set up to observe the droplet injection progression of a Picojet® printhead. For the full ejection cycle of 200 μs, the time sequence of the droplet shape for the ejection process was predicted and compared with micro-photographed images in order to validate the computer code. A simulation with two consecutive inkjet discharges was also conducted to demonstrate the possibility of redelivering droplets nearly identical in size. Analyses on the basis of 17 numerical experiments was extended to examine the drop quality in terms of droplet topology and breakup length and time by varying the parameters of manifold length, thickness of liquid inlet, exit diameter of nozzle, ejection time and the fluid's physical properties. The droplet ejection characteristics were determined to explore whether a Picojet® printhead can be used to dispense a variety of liquids such as water, anisol, PEDOT and MEH-PPV

L10 ANSWER 20 OF 54 INSPEC (C) 2007 IET on STN

ACCESSION NUMBER: 2006:8771303 INSPEC

TITLE: Nanofluidic channels fabrication and manipulation of DNA molecules
AUTHOR: Wang, K.; (Inst. of Optoelectronics, Shenzhen Univ., China), Yue, S.; Wang, L.; Jin, A.; Gu, C.; Wang, P.; Wang, H.; Xu, X.; Wang, Y.; Niu, H.
SOURCE: IEE Proceedings-Nanobiotechnology (20 Feb. 2006), vol.153, no.1, p. 11-15, 26 refs.
CODEN: IPNEAY, ISSN: 1478-1581
SICI: 1478-1581(20060220)153:1L.11:NCFM;1-D
Published by: IEE, UK
DOCUMENT TYPE: Journal
TREATMENT CODE: Practical; Experimental
COUNTRY: United Kingdom
LANGUAGE: English
AN 2006:8771303 INSPEC
AB Nanofluidic channel arrays, which have a width of about 40 nm, depth of 60 nm and length of 50 μm, were created using a focused-ion-beam milling instrument on a silicon nitride film swiftly and exactly, as is necessary. Stained λ-DNA molecules were put inside these sub-100 nm conduits by capillary force and they were stretched and transferred along these conduits, which were dealt with activating reagent Brij aqueous solution in advance. The movements of DNA molecules in these channels were discussed. These nano-structure channels may be useful in the study and analysis of the statics as well as the dynamics of single biomolecules

L10 ANSWER 21 OF 54 CAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 2005:1103165 CAPLUS
DOCUMENT NUMBER: 143:342231
TITLE: High density microtiter plate filler with funnel assembly
INVENTOR(S): Reed, Mark T.; Carrillo, Albert L.; Harding, Ian A.
PATENT ASSIGNEE(S): USA
SOURCE: U.S. Pat. Appl. Publ., 209 pp., Cont.-in-part of U.S. Ser. No. 944,673, abandoned.
CODEN: USXXCO
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 35
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 2005226782	A1	20051013	US 2005-86683	20050322
WO 2006017810	A2	20060216	WO 2005-US28066	20050804
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NG, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SM, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW				
RW: AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, LV, MC, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG, BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM				
EP 1779091	A2	20070502	EP 2005-783340	20050804
R: AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LI, LT, LU, LV, MC, NL, PL, PT, RO, SE, SI, SK, TR				
WO 2006102296	A2	20060928	WO 2006-US10171	20060321
WO 2006102296	A3	20070222		

W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, LY, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NG, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SM, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW

RW: AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, LV, MC, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG, BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM

PRIORITY APPLN. INFO.:

US 2003-504052P	P	20030919
US 2003-504500P	P	20030919
US 2004-589224P	P	20040719
US 2004-589225P	P	20040719
US 2004-913601	A2	20040805
US 2004-601716P	P	20040813
US 2004-944673	B2	20040917
US 2004-944691	B2	20040917
US 2005-86683	A	20050322
US 2005-87077	A	20050322
WO 2005-US28066	W	20050804

AB A filling apparatus for filling a microplate. The microplate having a plurality of wells each sized to receive an assay. The filling apparatus can comprise an output layer having a plurality of capillaries. Each of the plurality of capillaries can comprise an inlet and an outlet. A funnel member can comprise a first assay chamber and a first outlet in fluid communication with the first assay chamber. The first outlet can deliver a first fluid bead of the assay along a top surface of the output layer and in fluid communication with at least some of the plurality of capillaries such that a portion of the fluid bead is drawn within at least some of the plurality of capillaries in response to capillary force. The funnel member and the output layer can be moveable relative to each other between a first position and a second position to draw the first fluid bead across the top surface.

L10 ANSWER 22 OF 54 CAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2005:1075392 CAPLUS
DOCUMENT NUMBER: 143:342203
TITLE: High density microtiter plate filler with funnel assembly
INVENTOR(S): Reed, Mark T.; Carrillo, Albert L.; Harding, Ian A.
PATENT ASSIGNEE(S): USA
SOURCE: U.S. Pat. Appl. Publ., 210 pp., Cont.-in-part of U.S. Ser. No. 944,673, abandoned.
CODEN: USXXCO
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 35
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 2005220675	A1	20051006	US 2005-87077	20050322
WO 2006017810	A2	20060216	WO 2005-US28066	20050804

W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NG, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK,

SL, SM, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW
RW: AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, LV, MC, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG, BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM

EP 1779091	A2	20070502	EP 2005-783340 20050804
R: AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LI, LT, LU, LV, MC, NL, PL, PT, RO, SE, SI, SK, TR			
WO 2006102296	A2	20060928	WO 2006-US10171 20060321
WO 2006102296	A3	20070222	

W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, LY, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NG, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SM, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW
RW: AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, LV, MC, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG, BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM

PRIORITY APPLN. INFO.:	US 2003-504052P	P	20030919
	US 2003-504500P	P	20030919
	US 2004-589224P	P	20040719
	US 2004-589225P	P	20040719
	US 2004-913601	A2	20040805
	US 2004-601716P	P	20040813
	US 2004-944673	B2	20040917
	US 2004-944691	B2	20040917
	US 2005-86683	A	20050322
	US 2005-87077	A	20050322
	WO 2005-US28066	W	20050804

AB A filling apparatus for filling a microplate. The microplate having a plurality of wells each sized to receive an assay. The filling apparatus can comprise an output layer having a plurality of capillaries. Each of the plurality of capillaries can comprises an inlet and an outlet. A funnel assembly can comprise a funnel member sized to receive the assay. The funnel member can comprise an outlet for delivering a fluid bead of the assay along a top surface of the output layer and in fluid communication with each of the plurality of capillaries such that a portion of the fluid bead can be drawn within at least some of the plurality of capillaries in response to capillary force. The funnel assembly and the output layer can be moveable relative to each other between a first position and a second position to draw the fluid bead across the top surface.

L10 ANSWER 23 OF 54 CAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER:	2005:358329 CAPLUS
TITLE:	Microfluidic device with feed-through
INVENTOR(S):	Griss, Patrick; Siljegovic, Vuk
PATENT ASSIGNEE(S):	F. Hoffmann-La Roche Ag, Switz.; Roche Diagnostics Gmbh
SOURCE:	Eur. Pat. Appl. CODEN: EPXXDW
DOCUMENT TYPE:	Patent
LANGUAGE:	English
FAMILY ACC. NUM. COUNT:	1
PATENT INFORMATION:	

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
EP 1525917	A1	20050427	EP 2003-24420	20031023

R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, HU, SK

PRIORITY APPLN. INFO.: EP 2003-24420 20031023

AB The present invention is related to a microfluidic device (1, 30) having a front side (2) and a backside (3). The microfluidic device (1, 30) is provided with at least one first channel (14, 33, 34) on the front side (2) or the backside (3) of a substrate (1) and at least one second channel (15) on the front side (2) or the backside (3) of the substrate (1). The substrate (1) contains a feed-through area (12), to allow for a transfer of a liquid (20) from the front side (2) to the backside (3) of the substrate (1) or vice versa, driven by capillary forces.

REFERENCE COUNT: 8 THERE ARE 8 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L10 ANSWER 24 OF 54 CAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2005:28192 CAPLUS

DOCUMENT NUMBER: 142:116649

TITLE: Bubble-free fillable fluid channel and a procedure for its bubble-free filling

INVENTOR(S): Zengerle, Roland; Sandmaier, Hermann; Steinert, Chris

PATENT ASSIGNEE(S): Universitaet Freiburg, Germany; Hahn-Schickard-Gesellschaft Fuer Angewandte Forschung E.V.

SOURCE: Ger., 20 pp.
CODEN: GWXXAW

DOCUMENT TYPE: Patent

LANGUAGE: German

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
DE 10325110	B3	20050113	DE 2003-10325110	20030530

PRIORITY APPLN. INFO.: DE 2003-10325110 20030530

AB A fluid channel, which is fillable with a liquid by effect of capillary forces or with a pressure, contains a channel cross section, which is divided into ≥1 1st segment and ≥1 2nd segment, in which a liquid transport driven by capillary forces or the pressure is possible. A restraining mechanism restrains transfer of the liquid affected by the capillary forces or pressure from the 1st segment to the 2nd segment. Transfer of the liquid from the 1st segment to the 2nd segment is possible in a transfer range. The arrangement is suitable for microfluidic systems, especially in medicine, biol., and biotechnol.

REFERENCE COUNT: 7 THERE ARE 7 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L10 ANSWER 25 OF 54 CAPLUS COPYRIGHT 2007 ACS on STN DUPLICATE 4

ACCESSION NUMBER: 2005:1086318 CAPLUS

DOCUMENT NUMBER: 144:2420

TITLE: Microcontact Printing of Proteins Inside Microstructures

AUTHOR(S): Foley, Jennifer; Schmid, Heinz; Stutz, Richard; Delamarche, Emmanuel

CORPORATE SOURCE: Zurich Research Laboratory, IBM Research GmbH, Rueschlikon, 8803, Switz.

SOURCE: Langmuir (2005), 21(24), 11296-11303
CODEN: LANGD5; ISSN: 0743-7463

PUBLISHER: American Chemical Society
DOCUMENT TYPE: Journal
LANGUAGE: English

AB Microfluidic devices are well suited for the miniaturization of biol. assays, in particular when only small vols. of samples and reagents are available, short time to results is desirable, and multiple analytes are to be detected. Microfluidic networks (MFNs), which fill by capillary forces, have already been used to detect important biol. analytes with high sensitivity and in a combinatorial fashion. These MFNs were coated with Au, onto which a hydrophilic, protein-repellent monolayer of thiolated poly(ethylene glycol) (HS-PEG) was self-assembled, and the binding sites for analytes were present on a poly(dimethylsiloxane) (PDMS) sealing cover. The authors report here a set of simple methods to extend previous work on MFNs by integrating binding sites for analytes inside the microstructures of MFNs using microcontact printing (μCP). First, fluorescently labeled antibodies (Abs) were microcontact-printed from stamps onto planar model surfaces such as glass, Si, Si/SiO2, Au, and Au derivatized with HS-PEG to investigate how much candidate materials for MFNs would quench the fluorescence of printed, labeled Absolute Au coated with HS-PEG led to a fluorescence signal that was .apprx.65% weaker than that of glass but provided a convenient surface for printing Abs and for rendering the microstructures of the MFNs wettable. Then, proteins were inked from solution onto the surface of PDMS (Sylgard 184) stamps having continuous or discontinuous micropatterns or locally inked onto planar stamps to investigate how the aspect ratio (depth:width) of microstructures and the printing conditions affected the transfer of protein and the accuracy of the resulting patterns. By applying a controlled pressure to the back of the stamp, Abs were accurately microcontact-printed into the recessed regions of MFNs if the aspect ratio of the MFN microstructures was lower than approx. 1:6. Finally, the realization of a simple assay between Abs (used as antigens) microcontact-printed in microchannels and Abs from solution suggests that this method could become useful to pattern proteins in microstructures for advanced bioanal. purposes.

REFERENCE COUNT: 57 THERE ARE 57 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L10 ANSWER 26 OF 54 CAPLUS COPYRIGHT 2007 ACS on STN DUPLICATE 5
ACCESSION NUMBER: 2005:1341559 CAPLUS
DOCUMENT NUMBER: 145:287663
TITLE: Surface-modified polyolefin microfluidic devices for liquid handling
AUTHOR(S): Lin, Rongsheng; Burns, Mark A.
CORPORATE SOURCE: Department of Chemical Engineering, The University of Michigan, Ann Arbor, MI, 48109-2136, USA
SOURCE: Journal of Micromechanics and Microengineering (2005), 15(11), 2156-2162
CODEN: JMMIEZ; ISSN: 0960-1317
PUBLISHER: Institute of Physics Publishing
DOCUMENT TYPE: Journal
LANGUAGE: English

AB Polymer-based microfluidic devices offer an attractive platform for single-use disposable applications due to their low cost, ease of fabrication and good biocompatibility. The authors investigated liquid handling in surface modified polyolefin microfluidic devices. The modification of the surface was accomplished using UV light, and the contact angle was reduced from 88° to 45°. This type of treatment is easy to implement and could be beneficial for liquid handling in microchannel networks. Capillary-driven flow, contact angle hysteresis and pulsed pumping were demonstrated in these plastic devices. This surface treatment also facilitates rapid gel loading for separation since viscous sieving media can be injected solely by

capillary force. Nucleic acid separation was demonstrated in the gel-loaded devices.

REFERENCE COUNT: 34 THERE ARE 34 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L10 ANSWER 27 OF 54 COMPENDEX COPYRIGHT 2007 EEI on STN DUPLICATE 6

ACCESSION NUMBER: 2006(2):64 COMPENDEX

TITLE: Film transfer and bonding techniques for covering single-chip ejector array with microchannels and reservoirs.

AUTHOR: Kwon, Jae Wan (Department of Electrical and Computer Engineering University of Missouri, Columbia, MO 65211, United States); Yu, Hongyu; Kim, Eun Sok

SOURCE: Journal of Microelectromechanical Systems v 14 n 6 December 2005 2005.p 1399-1408

SOURCE: Journal of Microelectromechanical Systems v 14 n 6 December 2005 2005.p 1399-1408
CODEN: JMIYET ISSN: 1057-7157

PUBLICATION YEAR: 2005

DOCUMENT TYPE: Journal

TREATMENT CODE: Experimental

LANGUAGE: English

AN 2006(2):64 COMPENDEX

AB This paper describes a novel covering technique for an MEMS ejector array that is integrated with liquid reservoirs and microchannels on a single chip. The covering technique is based on wicking of a low viscous epoxy through the gap between the ejector wafer and a plate containing a parylene film, and allows the integrated ejector array to be fully covered by the parylene film with excellent uniformity, repeatability and yield. The technique is batch-processible and is suitable to cover many microfluidic systems with a thin film. The parylene film is tightly attached to the ejector array chip (with excellent bonding strength owing to the epoxy), so that liquid is automatically brought into the ejectors from the reservoirs through the microchannels: (due to capillary force), as the ejectors shoot out liquid droplets. This automatic liquid supply makes the liquid level (in the ejector) be maintained constant throughout the entire ejection process until more than 90% of the liquid stored in the reservoir is delivered to the ejector through the microchannel. This paper describes also a number of other covering methods that we have experimentally tried, and compares those with the new covering technique. $CPY 2005 IEEE. 36 Refs.

L10 ANSWER 28 OF 54 INSPEC (C) 2007 IET on STN

ACCESSION NUMBER: 2005:8659901 INSPEC

TITLE: Local in-situ hydrophilic treatment of micro-channels using surface discharge

AUTHOR: Gunji, M.; (Dept. of Mech. Eng., Tokyo Univ., Japan), Nakanishi, H.; Washizu, M.

SOURCE: TRANSDUCERS '05. The 13th International Conference on Solid-State Sensors, Actuators and Microsystems. Digest of Technical Papers (IEEE Cat. No. 05TH8791), Vol. 2, 2005, p. 1187-90 Vol. 2 of 2 vol. (xxxix+2162) pp., 6 refs.
ISBN: 0 7803 8994 8
Price: 0 7803 8994 8/2005/$20.00
Published by: IEEE, Piscataway, NJ, USA
Conference: TRANSDUCERS '05. The 13th International Conference on Solid-State Sensors, Actuators and Microsystems. Digest of Technical Papers, Seoul, South Korea, 5-9 June 2005
Sponsor(s): Korean Sensors Soc

DOCUMENT TYPE: Conference; Conference Article

TREATMENT CODE: Practical; Experimental
COUNTRY: United States
LANGUAGE: English
AN 2005:8659901 INSPEC
AB In this paper, we describe a new method of local hydrophilic treatment of polymer micro-channel using surface discharge generated by a micro-electrode array. The method uses a pair of interdigitating electrodes embedded beneath a hydrophobic polymer (e.g. PDMS) micro-channel. When RF voltage is applied to the electrodes, surface discharge occurs inside the channel, and its inside surface is modified to be hydrophilic. Because the diffusion length of the generated plasma is only a few tens of micrometers, the treatment is local and selective. By using such a hydrophobic/hydrophilic patterning method, a droplet dispenser is developed. A straight PDMS channel having a side branch at the middle is fabricated, and the hydrophilic treatment is applied to the straight part. Due to capillary force, water solution fed from one end of the channel fills the entire straight channel, and when air is fed from the side, the liquid is divided into two parts, one ejected from the outlet. The ejection releases the pressure, and the channel is refilled, ready for the next ejection. The process produces a series of droplets, whose volume is precisely determined by the volume of the hydrophilic channel

L10 ANSWER 29 OF 54 COMPENDEX COPYRIGHT 2007 EEI on STN
ACCESSION NUMBER: 2005(46):2571 COMPENDEX
TITLE: Film transfer and bonding technique to cover Lab on a Chip.
AUTHOR: Kwon, Jae Wan (Department of Electrical Engineering - Electrophysics University of Southern California, Los Angeles, CA 90089-0271, United States); Kamal-Bahl, Sanat; Kim, Eun Sok
MEETING TITLE: 13th International Conference on Solid-State Sensors and Actuators and Microsystems, TRANSDUCERS '05.
MEETING ORGANIZER: Korean Sensors Society; IEEE Electron Devices Society, EDS; IEE of Japan, Sensors and Micromachines Society; International Federation of Automatic Control; Institute of Control, Automation and Systems Engineers
MEETING LOCATION: Seoul, South Korea
MEETING DATE: 05 Jun 2005-09 Jun 2005
SOURCE: Digest of Technical Papers - International Conference on Solid State Sensors and Actuators and Microsystems, TRANSDUCERS '05 v 1 2005.p 940-943, (IEEE cat n 05TH8791)
SOURCE: Digest of Technical Papers - International Conference on Solid State Sensors and Actuators and Microsystems, TRANSDUCERS '05 v 1 2005.p 940-943, (IEEE cat n 05TH8791), arn: 2E4.122
SOURCE: TRANSDUCERS '05 - 13th International Conference on Solid-State Sensors and Actuators and Microsystems - Digest of Technical Papers
ISBN: 0780389948
PUBLICATION YEAR: 2005
MEETING NUMBER: 65909
DOCUMENT TYPE: Conference Article
TREATMENT CODE: Experimental
LANGUAGE: English
AN 2005(46):2571 COMPENDEX
AB This paper describes a novel film transfer technique with a new bonding technique to cover microfluidic components (on a silicon chip) with 6mum thick parylene layer. We have developed a batch-process technique for covering microfluidic systems such as a Lab on a Chip with a thin film, and applied it to packaging an integrated

microfluidic system containing a liquid-droplet ejector array, microchannels and reservoirs on a chip. The well-attached cover without any leak makes it possible for capillary force to bring liquid into the ejectors from the reservoirs through microchannels, so that the ejectors are supplied with the liquid(s) automatically from the reservoirs. The new bonding technique reported in this paper accomplishes a bonding at room temperature by using capillary flow and surface tension of low viscous aqueous bonding materials without any added pressure, and can also bond many different materials at a very low processing cost. $CPY 2005 IEEE. 7 Refs.

L10 ANSWER 30 OF 54 INSPEC (C) 2007 IET on STN
ACCESSION NUMBER: 2005:8651313 INSPEC
TITLE: Film transfer and bonding technique to cover lab on a chip
AUTHOR: Jae Wan Kwon; Kamal-Bahl, S.; Eun Sok Kim (Dept. of Electr. Eng. - Electrophys., Univ. of Southern California, Los Angeles, CA, USA)
SOURCE: TRANSDUCERS '05. The 13th International Conference on Solid-State Sensors, Actuators and Microsystems. Digest of Technical Papers (IEEE Cat. No. 05TH8791), Vol. 1, 2005, p. 940-3 Vol. 1 of 2 vol. (xxxix+2162) pp., 7 refs.
ISBN: 0 7803 8994 8
Price: 0-7803-8994-8/05/$20.00
Published by: IEEE, Piscataway, NJ, USA
Conference: TRANSDUCERS '05. The 13th International Conference on Solid-State Sensors, Actuators and Microsystems. Digest of Technical Papers, Seoul, South Korea, 5-9 June 2005
Sponsor(s): Korean Sensors Soc
DOCUMENT TYPE: Conference; Conference Article
TREATMENT CODE: New Development; Practical; Experimental
COUNTRY: United States
LANGUAGE: English
AN 2005:8651313 INSPEC
AB This paper describes a novel film transfer technique with a new bonding technique to cover microfluidic components, (on a silicon chip) with a 6 μm thick parylene layer. We have developed a batch-process technique for covering microfluidic systems such as a lab on a chip with a thin film, and applied it to packaging an integrated microfluidic system containing a liquid-droplet ejector array, microchannels and reservoirs on a chip. The well-attached cover without any leaks makes it possible for capillary force to bring liquid into the ejectors from the reservoirs through microchannels, so that the ejectors are supplied with the liquid(s) automatically from the reservoirs. The new bonding technique reported in this paper accomplishes a bonding at room temperature by using capillary flow and surface tension of low viscous aqueous bonding materials without any added pressure, and can also bond many different materials at a very low processing cost

L10 ANSWER 31 OF 54 CAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 2004:513163 CAPLUS
DOCUMENT NUMBER: 141:35940
TITLE: Method and apparatus for splitting of specimens into multiple channels of a microfluidic device
INVENTOR(S): Pugia, Michael J.; Profitt, James A.; Blankenstein, Gert; Peters, Ralf-Peter
PATENT ASSIGNEE(S): Bayer Healthcare LLC, USA
SOURCE: U.S. Pat. Appl. Publ., 17 pp.
CODEN: USXXCO

DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 2004121450	A1	20040624	US 2002-326157	20021219
US 7125711	B2	20061024		
WO 2004061414	A2	20040722	WO 2003-US39377	20031211
WO 2004061414	A3	20041007		
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW				
RW: BW, GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG				
AU 2003299602	A1	20040729	AU 2003-299602	20031211
EP 1590429	A2	20051102	EP 2003-799887	20031211
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, HU, SK				
JP 2006511810	T	20060406	JP 2004-565370	20031211

PRIORITY APPLN. INFO.: US 2002-326157 A 20021219
WO 2003-US39377 W 20031211

AB A microliter liquid sample, particularly a biol. sample, is analyzed in a device employing centrifugal and capillary forces. The sample is moved by capillary forces into one or more metering wells which define the amount of said sample to be analyzed in subsequent steps. The defined amount of the sample is transferred from the metering wells to one or more conditioning and reagent wells for measuring the amount of an analyte contained in each metered amount of the sample.

REFERENCE COUNT: 214 THERE ARE 214 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L10 ANSWER 32 OF 54 CAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 2004:96013 CAPLUS
TITLE: Capillary-channel probes for liquid pickup, transportation and dispense using stressy metal
INVENTOR(S): Hantschel, Thomas; Fork, David K.; Chow, Eugene M.; De, Bruyker Dirk; Rosa, Michel A.
PATENT ASSIGNEE(S): Palo Alto Research Center Incorporated, USA
SOURCE: U.S. Pat. Appl. Publ.
CODEN: USXXCO
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 2004022681	A1	20040205	US 2002-213059	20020805
EP 1388369	A2	20040211	EP 2003-254696	20030728
EP 1388369	A3	20041229		
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, HU, SK				

JP 2004106172	A	20040408	JP 2003-286395	20030805
US 2006057031	A1	20060316	US 2005-267762	20051103
PRIORITY APPLN. INFO.:			US 2002-213059 A	20020805

AB Fluidic conduits, which can be used in microarraying systems, dip pen nanolithography systems, fluidic circuits, and microfluidic systems, are disclosed that use channel spring probes that include at least one capillary channel. Formed from spring beams (e.g., stressy metal beams) that curve away from the substrate when released, channels can either be integrated into the spring beams or formed on the spring beams. Capillary forces produced by the narrow channels allow liquid to be gathered, held, and dispensed by the channel spring probes. Because the channel spring beams can be produced using conventional semiconductor processes, significant design flexibility and cost efficiencies can be achieved.

L10 ANSWER 33 OF 54 CAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 2004:608969 CAPLUS
DOCUMENT NUMBER: 141:142334
TITLE: Microfluidic arrangement for dosing of liquids
INVENTOR(S): Peters, Ralf; Osterloh, Dirk; Blankenstein, Gert
PATENT ASSIGNEE(S): Steag Microparts GmbH, Germany
SOURCE: Eur. Pat. Appl., 15 pp.
CODEN: EPXXDW
DOCUMENT TYPE: Patent
LANGUAGE: German
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
EP 1440732	A1	20040728	EP 2004-1179	20040121
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, HU, SK				
DE 10302721	A1	20040805	DE 2003-10302721	20030123
CN 1524619	A	20040901	CN 2004-10007419	20040120
JP 2004226412	A	20040812	JP 2004-16396	20040123
US 2004209381	A1	20041021	US 2004-762563	20040123
PRIORITY APPLN. INFO.:			DE 2003-10302721 A	20030123

AB The microfluidic arrangement for dosing of an amount of a 1st liquid and for separation of the latter from an amount of a 2nd liquid is characterized by (1) the arrangement has a 1st channel and 1 or several 2nd channel(s), (2) the 1st channel has an inlet and an outlet, (3) a capillary force in an outlet area is the same or greater than a capillary force in an inlet area, (4) the 2nd channels branch off from the 1st channel at 1 or several branching-off points, (5) the capillary force in the 2nd channel is greater than that in the 1st channel at the branching-off points, (6) the 2nd channels have a predetd. volume In the 1st channel, a liquid is transported from the inlet to the outlet. At the branching-off points, a portion of the liquid enters into the 2nd channels and fill them completely with the 1st dosed liquid amts. After the last branching-off point, the liquid portion remaining in the 1st channel exits from the 1st channel as the amount of the 2nd liquid The liquid amts. dosed in the 2nd channels are separated from te residual liquid amts. by using a gas which is present in the 1st channel after filling of all 2nd channels.

REFERENCE COUNT: 6 THERE ARE 6 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L10 ANSWER 34 OF 54 COMPENDEX COPYRIGHT 2007 EEI on STN DUPLICATE 7

ACCESSION NUMBER: 2004(46):5671 COMPENDEX
TITLE: Numerical simulation of growth and collapse of a bubble induced by a pulsed microheater.
AUTHOR: Hong, Yushik (Dept. of Mech./Aerosp. Engineering State University of New York, Buffalo, NY 14260, United States); Ashgriz, N.; Andrews, J.; Parizi, Hamideh
SOURCE: Journal of Microelectromechanical Systems v 13 n 5 October 2004 2004.p 857-869
SOURCE: Journal of Microelectromechanical Systems v 13 n 5 October 2004 2004.p 857-869
CODEN: JMIYET ISSN: 1057-7157
PUBLICATION YEAR: 2004
DOCUMENT TYPE: Journal
TREATMENT CODE: Theoretical; Experimental
LANGUAGE: English
AN 2004(46):5671 COMPENDEX
AB A three-dimensional numerical analysis of the growth and collapse of a bubble on a microheater is presented. SIMULENT code, which solves the full Navier-Stokes equations with surface tension effects, is used in these simulations. A volume of fluid (VOF) interface tracking algorithm is used to track the evolution of the free surface flow. A one-dimensional heat conduction model is used to consider the energy transfer between the bubble and the surrounding liquid, as well as the temperature distribution in the liquid layer. Details of the velocity and pressure distribution in the liquid during the growth and collapse of the vapor bubble are obtained. Numerical results for the growth and the collapse of the bubbles are compared with those of experiments under similar conditions. Comparisons show that the volume evolution of the vapor bubble is well predicted by the numerical model. $CPY 2004 IEEE. 20 Refs.

L10 ANSWER 35 OF 54 CAPLUS COPYRIGHT 2007 ACS on STN DUPLICATE 8
ACCESSION NUMBER: 2004:407152 CAPLUS
DOCUMENT NUMBER: 141:56361
TITLE: The fluid property dependency on micro-fluidic characteristics in the deposition process for microfabrication
AUTHOR(S): Chau, S. W.; Hsu, K. L.; Chen, S. C.; Liou, T. M.; Shih, K. C.
CORPORATE SOURCE: Department of Mechanical Engineering, Chung Yuan Christian University, Chung-Li, 320, Taiwan
SOURCE: Biosensors & Bioelectronics (2004), 20(1), 133-138
CODEN: BBIOE4; ISSN: 0956-5663
PUBLISHER: Elsevier
DOCUMENT TYPE: Journal
LANGUAGE: English
AB The droplet impingement into a cavity at micrometer-scale is one of important fluidic issues for microfabrications, e.g. the ink jet deposition process in the PLED display manufacturing The related micro-fluidic behaviors in the deposition process should be carefully treated to ensure the desired quality of microfabrication. The droplets generally dispensing from an ink jet head, which contains an array of nozzles, have a volume in several picoliters, while each nozzle responds very quickly and jets the droplets into cavities on substrates with micrometer size. The nature of droplet impingement depends on the fluid properties, the initial state of droplet, the impact parameters and the surface characteristics. The commonly chosen non-dimensional nos. to describe this process are the Weber number, the Reynolds number, the Ohnesorge number, and the Bond number This paper discusses the influences of fluid properties of a Newtonian fluid, such as surface tension and fluid viscosity, on micro-fluidic characteristics for a certain jetting speed in the deposition process via a numerical approach, which

indicates the impingement process consists of four different phases. In the first phase, the droplet stretching outwards rapidly, where inertia force is dominated. In the second phase, the recoiling of droplet is observed, where surface tension becomes the most important force. In the third phase, the gravitational force pulls the droplet surface towards cavity walls. The fourth phase begins when the droplet surface touches cavity walls and ends when the droplet obtains a stable shape. If the fluid viscosity is relatively small, the droplet surface touches cavity walls in the second phase. A stable fluid layer would not form if the viscosity is relatively small.

REFERENCE COUNT: 18 THERE ARE 18 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L10 ANSWER 36 OF 54 CAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 2004:223725 CAPLUS
TITLE: pH-Gated porosity transitions of polyelectrolyte multilayers in confined geometry
AUTHOR(S): Zhai, Lei; Ahn, Hyunku; Rubner, Michael; Cohen, Robert E.
CORPORATE SOURCE: Department of Materials Science and Engineering, Massachusetts Institute of Technology, Cambridge, MA, 02139, USA
SOURCE: Abstracts of Papers, 227th ACS National Meeting, Anaheim, CA, United States, March 28-April 1, 2004 (2004), COLL-122. American Chemical Society: Washington, D. C.
CODEN: 69FGKM
DOCUMENT TYPE: Conference; Meeting Abstract
LANGUAGE: English

AB Polymeric nanoporous structures in confined geometry have numerous applications in photonic structures, microfluid channels, and drug delivery systems. Polyelectrolyte multilayers with alternating porous and fully-dense regions have been assembled from poly(acrylic acid) (PAA), poly(allylamine hydrochloride) (PAH) and polystyrene sulfonate (SPS) in appropriate combinations. The porous zones were developed post-assembly, via immersion of the hetero-structures into an aqueous acidic medium followed by rinsing in deionized water. Properly assembled PAA/PAH strata exhibit a reversible, pH-gated nanoporosity while the SPS/PAH regions remain unchanged at low pH. Organic liquid crystal mols. were successfully loaded selectively into the dry nanoporous regions via a capillary force driven wicking action. We have examined the liquid cystal-filled materials in the context of Bragg stacks with tunable refractive index layers. The application of these structures as one-dimensional dielec. mirrors and vapor sensors have been investigated. Applications in drug delivery are also discussed.

L10 ANSWER 37 OF 54 INSPEC (C) 2007 IET on STN
ACCESSION NUMBER: 2004:8061468 INSPEC
DOCUMENT NUMBER: B2004-09-8380M-006
TITLE: A nanoscale spring-loaded valve actuated by colloidal forces
AUTHOR: Fuchser, J.; Das, P.K.; Moussa, W.; Bhattacharjee, S. (Dept. of Mech. Eng., Alberta Univ., Edmonton, Alta., Canada)
SOURCE: Journal of Computational and Theoretical Nanoscience (March 2004), vol.1, no.1, p. 81-7, 16 refs.ISSN: 1546-1955
SICI: 1546-1955(200403)1:1L.81:NSLV;1-Q
Price: 1546-198X/2004/01/081/007/$17.00+.25
Published by: American Scientific Publishers, USA
DOCUMENT TYPE: Journal
TREATMENT CODE: Practical; Theoretical

COUNTRY: United States
LANGUAGE: English
AN 2004:8061468 INSPEC DN B2004-09-8380M-006
AB A spring-loaded valve analogue based on utilization of colloidal forces between two nano-particles in a confined domain is proposed. The governing principle of the proposed valve is that altering the surface potential of the walls of a confining cylindrical capillary can modulate the electrostatic component of the total colloidal force between two particles. This colloidal force can function as a restoring force of a spring-loaded valve acting against the external forces exerted by the fluid. Dynamic simulations of the valve actuation are presented, showing the motion of the microvalve components under the influence of different wall surface potentials and external forces. The simulations indicate that colloidal forces can be utilized effectively to actuate the valve under typical external loadings anticipated in microscale fluidic channels

L10 ANSWER 38 OF 54 CAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 2004:230701 CAPLUS
DOCUMENT NUMBER: 141:24272
TITLE: Reversible porosity transitions in polyelectrolyte multilayers
AUTHOR(S): Ahn, H.; Zhai, L.; Cohen, R. E.; Rubner, M. F.
CORPORATE SOURCE: Departments of Materials Science and Engineering and Chemical Engineering, MIT, Cambridge, MA, 02139, USA
SOURCE: PMSE Preprints (2004), 90, 4-5
CODEN: PPMRA9; ISSN: 1550-6703
PUBLISHER: American Chemical Society
DOCUMENT TYPE: Journal; (computer optical disk)
LANGUAGE: English
AB Polymeric nanoporous structures in confined geometry have numerous applications in photonic structures, microfluid channels, and drug delivery systems. Polyelectrolyte multilayers with alternating porous and fully-dense regions were assembled from poly(acrylic acid) (PAA), poly(allylamine hydrochloride) (PAH) and polystyrene sulfonate (SPS) in appropriate combinations. The porous zones were developed post-assembly, via immersion of the hetero-structures into an aqueous acidic medium followed by rinsing in deionized water. Properly assembled PAA/PAH strata exhibit a reversible, pH-gated nanoporosity while the SPS/PAH regions remain unchanged at low pH. Organic liquid crystal mols. were successfully loaded selectively into the dry nanoporous regions via a capillary force driven wicking action. We have examined the liquid crystal-filled materials in the context of Bragg stacks with tunable refractive index layers. The application of these structures as one-dimensional dielec. mirrors and vapor sensors were studied. Applications in drug delivery are also discussed.
REFERENCE COUNT: 5 THERE ARE 5 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L10 ANSWER 39 OF 54 CAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 2003:174197 CAPLUS
DOCUMENT NUMBER: 138:206979
TITLE: Retaining microfluidic microcavity and other microfluidic structures
INVENTOR(S): Andersson, Per; Ekstrand, Gunnar
PATENT ASSIGNEE(S): Gyros AB, Swed.
SOURCE: U.S. Pat. Appl. Publ., 27 pp.
CODEN: USXXCO
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 8
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 2003044322	A1	20030306	US 2002-229676	20020828
US 6919058	B2	20050719		
WO 2002074438	A2	20020926	WO 2002-SE531	20020319
WO 2002074438	A3	20030116		
WO 2002074438	A8	20040422		
W: AU, CA, JP, US				
RW: AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR				
WO 2002075312	A1	20020926	WO 2002-SE537	20020319
W: AU, CA, JP, US				
RW: AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR				
WO 2002075775	A1	20020926	WO 2002-SE538	20020319
W: AU, CA, JP, US				
RW: AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR				
WO 2002075776	A1	20020926	WO 2002-SE539	20020319
W: AU, CA, JP, US				
RW: AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR				
JP 2005506198	T	20050303	JP 2003-538060	20021016
WO 2003093802	A1	20031113	WO 2003-SE706	20030429
W: AU, CA, JP, US				
RW: AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR				
AU 2003224586	A1	20031117	AU 2003-224586	20030429
JP 2005523728	T	20050811	JP 2004-501918	20030429
US 2005153431	A1	20050714	US 2004-10869	20041213
US 2005153432	A1	20050714	US 2004-10870	20041213
US 2005153433	A1	20050714	US 2004-10957	20041213
US 2005153434	A1	20050714	US 2004-10977	20041213

PRIORITY APPLN. INFO.:		
US 2001-315471P	P	20010828
US 2001-322621P	P	20010917
SE 2001-3522	A	20011021
SE 2001-4077	A	20011205
WO 2002-SE531	A	20020319
WO 2002-SE537	A	20020319
WO 2002-SE538	A	20020319
WO 2002-SE539	A	20020319
SE 2002-1310	A	20020430
US 2002-376776P	P	20020430
SE 2001-951	A	20010319
SE 2001-952	A	20010319
US 2001-811741	A	20010319
US 2001-812123	A	20010319
SE 2001-3117	A	20010917
US 2001-4424	A	20011206
SE 2002-242	A	20020128
US 2002-229676	A	20020828
WO 2002-SE1539	A	20020828
WO 2002-SE1888	W	20021016
WO 2003-SE706	W	20030429

AB A microfluidic device that comprises several microchannel structures in which there are an inlet port, an outlet port and therebetween a structural unit comprising a fluidic function. The structural unit can be selected amongst units enabling (a) retaining of nl-aliquots comprising constituents which was defined by mixing of aliquots within the microfluidic device (unit A), (b) mixing of aliquots of liqs. (unit B), (c) partition of larger aliquots of liqs. into

smaller aliquots of liqs. and distributing the latter individually and in parallel to different microchannel structure of the same microfluidic device (unit C), (d) quick penetration into a microchannel structure of an aliquot of a liquid dispensed to an inlet port of a microchannel structure (unit D), and (e) volume definition integrated within a microchannel structure (unit E). The microchannel structures of the present invention are intended for transport and processing of one or more aliquots of liqs. In preferred variants capillary force and centrifugal force are used for the transport of the aliquots. In preferred variants at least one of the aliquots referred to in the description of a structural unit should have a surface tension, which is ≥5 mN/m, such as ≥10 mN/ m or ≥20 mN/m.

REFERENCE COUNT: 40 THERE ARE 40 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L10 ANSWER 40 OF 54 CAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 2003:154896 CAPLUS
DOCUMENT NUMBER: 138:183458
TITLE: Novel micro array for high throughput screening
INVENTOR(S): Freeman, Alex Reddy
PATENT ASSIGNEE(S): Cytoplex Biosciences, USA
SOURCE: U.S. Pat. Appl. Publ., 16 pp.
CODEN: USXXCO
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 2003039585	A1	20030227	US 2001-939087	20010824
US 6969489	B2	20051129		
PRIORITY APPLN. INFO.:			US 2001-939087	20010824

AB Array based fluid is stored in through holes that extend through a substrate. Combined capillary and hydrophilic forces are used to retain the fluid and also transfer it to other substrates of similar type. In another embodiment vacuum and pressure forces are used to introduce the fluid and remove the fluid from the known through holes and transfer the remaining fluid to other substrates. In yet another embodiment, electrokinetic forces are used to retain and move the fluids across the substrates via the through holes. The substrates are aligned and the fluids are transferred or mixed based on the above techniques.

REFERENCE COUNT: 23 THERE ARE 23 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L10 ANSWER 41 OF 54 INSPEC (C) 2007 IET on STN
ACCESSION NUMBER: 2004:7898116 INSPEC
DOCUMENT NUMBER: A2004-08-4755K-020
TITLE: Thermocapillary droplet migration on an inclined solid surface
AUTHOR: Smith, M.K.; (George W. Woodruff Sch. of Mech. Eng., Georgia Inst. of Technol., Atlanta, GA, USA), Benintendi, S.W.; Benjamin, I.V. CP
SOURCE: Interfacial fluid dynamics and transport processes, 2003, p. 263-89 of xviii+367 pp., 44 refs.
Editor(s): Narayanan, R.; Schwabe, D.
ISBN: 3 540 40583 6
Published by: Springer-Verlag, Berlin, Germany
DOCUMENT TYPE: Book; Book Article
TREATMENT CODE: Theoretical

COUNTRY: Germany
LANGUAGE: English
AN 2004:7898116 INSPEC DN A2004-08-4755K-020
AB Active control of the position of a liquid droplet on a solid surface is a crucial part in the design of discrete fluid management technology for microfluidic applications. One way to accomplish this control is to impose specially shaped thermal fields upon the droplet and/or the solid surface. The imposed temperature gradient produces a surface-tension-driven flow inside the droplet that forces the motion of the contact line. When the imposed temperature gradient is large enough, this motion causes the droplet to migrate in the direction of decreasing temperature. In this paper, a detailed lubrication theory is presented that describes this internal flow and the subsequent contact-line motion in a thin droplet. Results are presented to show that this technique can be used to drive a droplet up an inclined solid surface against the force of gravity

L10 ANSWER 42 OF 54 CAPLUS COPYRIGHT 2007 ACS on STN DUPLICATE 9
ACCESSION NUMBER: 2003:909685 CAPLUS
DOCUMENT NUMBER: 139:366819
TITLE: Modeling of Electroosmotic Flow and Capillary Electrophoresis with the Joule Heating Effect : The Nernst-Planck Equation versus the Boltzmann Distribution
AUTHOR(S): Tang, G. Y.; Yang, C.; Chai, C. J.; Gong, H. Q.
CORPORATE SOURCE: School of Mechanical and Production Engineering, Nanyang Technological University, Singapore, 639798, Singapore
SOURCE: Langmuir (2003), 19(26), 10975-10984
CODEN: LANGD5; ISSN: 0743-7463
PUBLISHER: American Chemical Society
DOCUMENT TYPE: Journal
LANGUAGE: English
AB Joule heating is present in electrokinetic transport phenomena, which are widely used in microfluidic systems. A rigorous math. model is developed to describe the Joule heating and its effects on electroosmotic flow and mass species transport in microchannels. The proposed model includes the Poisson equation, the modified Navier-Stokes equation, and the conjugate energy equation (for the liquid solution and the capillary wall). Specifically, the ionic concentration distributions are modeled using (i) the general Nernst-Planck equation and (ii) the simple Boltzmann distribution. The relevant governing equations are coupled through the temperature-dependent solution dielec. constant, viscosity, and thermal conductivity, and, hence, they are numerically solved using a finite-volume-based CFD technique. The applicability of the Nernst-Planck equation and the Boltzmann distribution in the electroosmotic flow with Joule heating has been discussed. The results of the time and spatial development for both the electroosmotic flow field and the Joule heating induced temperature field are presented. It is found that the presence of the Joule heating can result in significantly different electroosmotic flow and mass species transport characteristics.
REFERENCE COUNT: 26 THERE ARE 26 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L10 ANSWER 43 OF 54 CAPLUS COPYRIGHT 2007 ACS on STN DUPLICATE 10
ACCESSION NUMBER: 2003:423017 CAPLUS
DOCUMENT NUMBER: 139:299120
TITLE: Microfluidic etching driven by capillary forces for rapid prototyping of gold structures

AUTHOR(S): Stark, R. W.; Sakai Stalder, M.; Stemmer, A.
CORPORATE SOURCE: Swiss Federal Institute of Technology Zurich, Nanotechnology Group, ETH Center CLA, Zurich, CH-8092, Switz.
SOURCE: Microelectronic Engineering (2003), 67-68, 229-236
CODEN: MIENEF; ISSN: 0167-9317
PUBLISHER: Elsevier Science B.V.
DOCUMENT TYPE: Journal
LANGUAGE: English

AB Soft lithog. methods based on poly(dimethylsiloxane) (PDMS) for pattern transfer are established alternatives to conventional lithog. methods. For applications in the biol. sciences functionalized and structured noble metal surfaces are required. In order to allow for rapid prototyping of such gold structures a method is needed that does not change the surface chemical This can be achieved by a microfluidic system on a gold substrate that is filled with an etchant. From theor. considerations simple thumb rules for the geometric and chemical design of such a microfluidic system were established. For exptl. testing a microfluidic system was realized by contacting a structured PDMS stamp with a substrate consisting of a 50-nm-thick gold layer on a glass object slide. The etchant was applied to the entrance of the capillary and the acid was drawn into the fluidic system by capillary forces. Taking advantage of a PDMS stamp structured with wetting and non-wetting regions no addnl. self-assembled monolayer was needed for masking.

REFERENCE COUNT: 19 THERE ARE 19 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L10 ANSWER 44 OF 54 INSPEC (C) 2007 IET on STN
ACCESSION NUMBER: 2004:7891245 INSPEC
DOCUMENT NUMBER: B2004-04-2575D-026
TITLE: Micro capillary-force driven fluidic accumulator/pressure source
AUTHOR: Hobbs, E.D.; Pisano, A.P. (Dept. of Electr. Eng., California Univ., Berkeley, CA, USA)
SOURCE: TRANSDUCERS '03. 12th International Conference on Solid-State Sensors, Actuators and Microsystems. Digest of Technical Papers (Cat. No.03TH8664), vol.1, 2003, p. 155-8 vol.1 of 2 vol.(xl+xxxix+1938) pp., 14 refs., Also available on CD-ROM in PDF format
ISBN: 0 7803 7731 1
Price: 0 7803 7731 1/2003/$17.00
Published by: IEEE, Piscataway, NJ, USA
Conference: IEEE International Solid-State Sensors and Actuators Conference, Boston, MA, USA, 8-12 June 2003
Sponsor(s): IEEE; Electron Devices Soc
DOCUMENT TYPE: Conference; Conference Article
TREATMENT CODE: Practical; Theoretical; Experimental
COUNTRY: United States
LANGUAGE: English

AN 2004:7891245 INSPEC DN B2004-04-2575D-026

AB Future portable, continuously monitoring, ultra low-power fluidic bioassay systems are likely to require fluidic pumping devices allowing the actuation of fluids with a minimum expenditure of electrical energy. One method to accomplish this is to utilize a micro-osmotic pump coupled with a micro capillary-force driven fluidic accumulator to make possible a pressure source that requires no electrical power. This paper reports new micro structures to harness surface tension forces and thereby make possible micro fluidic accumulators in a planar wafer-level process, allowing for simple integration with other microfluidic devices such as pumps, valves, and mixers. Experimental results show that fluid

can be stored at predictable and elevated pressures in this device after being charged by an external pressurized source (accumulation). The stored fluid can be dispensed later at a near constant pressure depending on the output fluidic resistance. Pressures of 6500 Pa and flow rates as high as 7.2 μL/min with a dispensed volume of 1.2 μL were achieved without electrical energy

L10 ANSWER 45 OF 54 CAPLUS COPYRIGHT 2007 ACS on STN DUPLICATE 11
ACCESSION NUMBER: 2003:380779 CAPLUS
DOCUMENT NUMBER: 140:213345
TITLE: A polymer-based microfluidic device for immunosensing biochips
AUTHOR(S): Ko, Jong Soo; Yoon, Hyun C.; Yang, Haesik; Pyo, Hyeon-Bong; Chung, Kwang Hyo; Kim, Sung Jin; Kim, Youn Tae
CORPORATE SOURCE: BioMEMS Group, Basic Research Laboratory, ETRI, Daejeon, 305600, S. Korea
SOURCE: Lab on a Chip (2003), 3(2), 106-113
CODEN: LCAHAM; ISSN: 1473-0197
PUBLISHER: Royal Society of Chemistry
DOCUMENT TYPE: Journal
LANGUAGE: English
AB This paper describes the design, fabrication, and test of a PDMS/PMMA-laminated microfluidic device for an immunosensing biochip. A poly(di-Me siloxane) (PDMS) top substrate molded by polymer casting and a poly(Me methacrylate) (PMMA) bottom substrate fabricated by hot embossing are bonded with pressure and hermetically sealed. Two inlet ports and an air vent are opened through the PDMS top substrate, while gold electrodes for electrochem. biosensing are patterned onto the PMMA bottom substrate. The analyte sample is loaded from the sample inlet port to the detection chamber by capillary force , without any external intervening forces. For this and to control the time duration of sample fluid in each compartment of the device, including the inlet port, diffusion barrier, reaction chamber, flow-delay neck, and detection chamber, the fluid conduit has been designed with various geometries of channel width, depth, and shape. Especially, the fluid path has been designed so that the sample flow naturally stops after filling the detection chamber to allow sufficient time for biochem. reaction and subsequent washing steps. As model immunosensing tests for the microfluidic device, functionalizations of ferritin and biotin to the sensing surfaces on gold electrodes and their biospecific interactions with antiferritin antiserum and streptavidin have been investigated. An electrochem. detection method for immunosensing by biocatalyzed precipitation has been developed and applied for signal registration.
With the biochip, the whole immunosensing processes could be completed within 30 min.
REFERENCE COUNT: 35 THERE ARE 35 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L10 ANSWER 46 OF 54 INSPEC (C) 2007 IET on STN
ACCESSION NUMBER: 2002:7344419 INSPEC
DOCUMENT NUMBER: A2002-18-0710C-003; B2002-09-2575-008
TITLE: A study of liquid dispensing head using fluidic inertia
AUTHOR: Takahashi, S.; (Fac. of Eng., Yamagata Univ., Japan), Kitagawa, H.; Tomikawa, Y.
SOURCE: Japanese Journal of Applied Physics, Part 1 (Regular Papers, Short Notes & Review Papers) (May 2002), vol.41, no.5B, p. 3442-5, 13 refs.
CODEN: JAPNDE, ISSN: 0021-4922
SICI: 0021-4922(200205)41:5BL.3442:SLDH;1-Z

Published by: Japan Soc. Appl. Phys, Japan
Conference: 22nd Symposium on Ultrasonic Electronics (USE2001), Kanagawa, Japan, 7-9 Nov. 2001
DOCUMENT TYPE: Conference; Conference Article; Journal
TREATMENT CODE: Practical; Experimental
COUNTRY: Japan
LANGUAGE: English
AN 2002:7344419 INSPEC DN A2002-18-0710C-003; B2002-09-2575-008
AB A nanoliter dispensing head based on a novel principle has been proposed. In this dispensing head, a piezo ceramics transducer moves a glass capillary holding liquid in the direction of dispensation. As a result of this movement, pressure waves are generated in the capillary, resulting in the dispensing of a small droplet from the nozzle. In order to understand the basic performance of this head, we have studied the effect of voltage waveform application to the piezo ceramics transducer on droplet formation. We have also studied the effect of sample liquid volume in the capillary on droplet formation and the effect of sample liquid viscosity on droplet properties. Under typical dispensing conditions, the volume of a drop was 1 nl and the coefficient of variation was 5%

L10 ANSWER 47 OF 54 INSPEC (C) 2007 IET on STN
ACCESSION NUMBER: 2002:7332549 INSPEC
DOCUMENT NUMBER: A2002-17-8130F-009; B2002-09-2575F-003
TITLE: Transport and solidification phenomena in molten microdroplet pileup
AUTHOR: Haferl, S.; Poulikakos, D. (Dept. of Mech. & Process Eng., Inst. of Energy Technol., Zurich, Switzerland)
SOURCE: Journal of Applied Physics (1 Aug. 2002), vol.92, no.3, p. 1675-89, 60 refs.
CODEN: JAPIAU, ISSN: 0021-8979
SICI: 0021-8979(20020801)92:3L.1675:TSPM;1-X
Price: 0021-8979/2002/92(3)/1675(15)/$19.00
Doc.No.: S0021-8979(02)04516-4
Published by: AIP, USA
DOCUMENT TYPE: Journal
TREATMENT CODE: Theoretical; Experimental
COUNTRY: United States
LANGUAGE: English
AN 2002:7332549 INSPEC DN A2002-17-8130F-009; B2002-09-2575F-003
AB This article presents a predominantly numerical investigation of the transient transport phenomena occurring during the pileup (deposition one upon another) of molten, picoliter-size liquid metal droplets relevant to a host of novel micromanufacturing processes. The investigated phenomena last fractions of a millisecond in severely deforming domains of typical size of a small fraction of a millimeter. The prevailing physical mechanisms of the pileup process (occurring simultaneously) are identified and quantified numerically. These are the fluid mechanics of the bulk liquid, capillarity effects at the liquid-solid interface, heat transfer, solidification, and thermal contact resistance effects at all interfaces. In terms of values of the Reynolds, Weber, and Stefan number the following ranges are covered: Re=281-453, We=2.39-5.99, and Ste=0.187-0.895. This corresponds to molten solder droplets impinging at velocities ranging between 1.12 and 1.74 m/s having an average diameter of $\approx$78 μm. The initial substrate temperature ranges between 25 and 150°C. The initial droplet temperature is 210°C. The numerical model presented is based on a Lagrangian formulation of the Navier-Stokes equations accounting for surface tension, thermal contact resistance, solidification, and a Navier slip condition at the dynamic contact line. Results of simulations are presented showing the effect of

thermal contact resistance and slip at the dynamic contact line on the transients and the outcome of a pileup. Comparisons of the simulated pileup with experimental visualizations are shown, demonstrating good agreement in cases where inertia dominates over capillary effects. For decreasing Stefan number (i.e., higher substrate temperatures) an increasing importance of wetting is observed. For these cases the limitations of the employed popular boundary condition at the dynamic contact line is demonstrated and the need for experimental data (currently nonexistent in the literature) that would yield an improved condition at the contact line accounting for the temperature dependence of wetting phenomena is underpinned

L10 ANSWER 48 OF 54 CAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 2003:740099 CAPLUS
DOCUMENT NUMBER: 139:262750
TITLE: Towards integrated microsystems for chemical synthesis
AUTHOR(S): Jensen, Klavs F.
CORPORATE SOURCE: Chemical Engineering and Materials Science & Engineering, Massachusetts Institute of Technology, Cambridge, MA, USA
SOURCE: Micro Total Analysis Systems 2002, Proceedings of the μTAS 2002 Symposium, 6th, Nara, Japan, Nov. 3-7, 2002 (2002), Volume 2, 642-645. Editor(s): Baba, Yoshinobu; Shoji, Shuichi; Van den Berg, Albert. Kluwer Academic Publishers: Dordrecht, Neth.
CODEN: 69EMKZ; ISBN: 1-4020-1011-7
DOCUMENT TYPE: Conference
LANGUAGE: English
AB Steps towards the realization of integrated chemical systems are presented with particular emphasis on multiphase reactions, chemical separation, process monitoring, and the integration of these components. Flow visualization techniques for multiphase flows and microfabrication enabled methods for characterizing mass transfer are described. Techniques that exploit surface tension effects are introduced for efficient separation of gas-liquid flows. Microsystems capable of creating and breaking high interfacial area emulsions are proposed for extraction of products. Integration of anal. tools is achieved in terms of on-chip integration of optical spectroscopy as well as in-line use of gas-chromatog. and mass spectroscopy to microfluidic devices. Challenges in the integration of microfluidic, reaction, separation, and anal. units into a microchem. system are considered starting from experiences with a multireactor system for testing heterogeneous catalytic reactions.
REFERENCE COUNT: 5 THERE ARE 5 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L10 ANSWER 49 OF 54 INSPEC (C) 2007 IET on STN
ACCESSION NUMBER: 2003:7633285 INSPEC
DOCUMENT NUMBER: A2003-13-8780-005
TITLE: Numerical simulation of protein stamping process driven by capillary force
AUTHOR: Shih-Chang Lin; Fangang Tseng; Ching-Chang Chieng (Dept. of Eng. & Syst. Sci., Nat. Tsing Hua Univ., Hsinchu, Taiwan)
SOURCE: IEEE Transactions on Nanobioscience (Sept. 2002), vol.1, no.3, p. 121-8, 9 refs.
CODEN: ITMCEL, ISSN: 1536-1241
SICI: 1536-1241(200209)1:3L.121:NSPS;1-L
Price: 1536-1241/02/$17.00
Published by: IEEE, USA
DOCUMENT TYPE: Journal

TREATMENT CODE: Theoretical
COUNTRY: United States
LANGUAGE: English
AN 2003:7633285 INSPEC DN A2003-13-8780-005
AB Numerical simulations based on first-principle conservation laws of mass and momentum are performed to observe flow characteristics during the stamping process. The protein solution is transferred by a new design of microstamps with microchannels and printed on a bottom substrate. Furthermore, key physics of the stamping process and the control factors achieving uniform spot size can be identified and optimized after these simulations

L10 ANSWER 50 OF 54 COMPENDEX COPYRIGHT 2007 EEI on STN
ACCESSION NUMBER: 2004(45):6771 COMPENDEX
TITLE: Modelling free jet ejection on a system level - An approach for microfluidics.
AUTHOR: Koltay, P. (Inst. for Micro System Technology University of Freiburg, D-79110 Freiburg, Germany); Moosmann, C.; Litterst, C.; Streute, W.; Birkenmeier, B.; Zengerle, R.
MEETING TITLE: 2002 International Conference on Modeling and Simulation of Microsystems - MSM 2002.
MEETING ORGANIZER: Applied Computational Research Society; Defense Advanced Research Projects Agency (DARPA); American Physical Society (APS); Society for Industrial and Applied Mathematics (SIAM)
MEETING LOCATION: San Juan, Puerto Rico
MEETING DATE: 21 Apr 2002-25 Apr 2002
SOURCE: 2002 International Conference on Modeling and Simulation of Microsystems - MSM 2002 2002.p 112-115
SOURCE: 2002 International Conference on Modeling and Simulation of Microsystems - MSM 2002 2002.p 112-115 ISBN: 0970827571
PUBLICATION YEAR: 2002
MEETING NUMBER: 63728
DOCUMENT TYPE: Conference Article
TREATMENT CODE: Theoretical
LANGUAGE: English
AN 2004(45):6771 COMPENDEX
AB Fast simulation of complex microfluidic systems requires consideration of network simulations based on lumped models as an alternative to standard computational fluid dynamic (CDF) simulations. In this paper we describe an analytical model of an orifice, capable of handling free jets and droplet ejection. It is intended to be used as a multipurpose model for simulations of microfluidic systems (e.g. ink-jet print heads or micro dispensers). The approach is based on distinction between different fluidic states occurring during operation. Whether the orifice is self-priming by capillary forces or ejecting a liquid jet driven by a certain pressure for example, different formulas are used to describe the flow. Though the used formulas are adopted from standard fluidic theory good agreement is found between simulations and experiments performed to validate the model. 11 Refs.

L10 ANSWER 51 OF 54 CAPLUS COPYRIGHT 2007 ACS on STN DUPLICATE 12
ACCESSION NUMBER: 2001:808865 CAPLUS
DOCUMENT NUMBER: 137:17347
TITLE: Design and fabrication of CD-like microfluidic platforms for diagnostics: microfluidic functions
AUTHOR(S): Madou, Marc J.; Lee, L. James; Daunert, Sylvia; Lai, Siyi; Shih, Chih-Hsin

CORPORATE SOURCE: Department of Materials Science and Engineering, The Ohio State University Columbus, OH, 43210, USA
SOURCE: Biomedical Microdevices (2001), 3(3), 245-254
CODEN: BMICFC; ISSN: 1387-2176
PUBLISHER: Kluwer Academic Publishers
DOCUMENT TYPE: Journal
LANGUAGE: English

AB In this paper, the design of a polymer based microfluidic compact disk (CD) platform is presented. Several microfluidic functions such as flow sequencing, cascade micro-mixing, and capillary metering can be integrated into the CD by balancing the centrifugal force and the capillary force . These functions are demonstrated exptl. For flow sequencing, a two-point calibration design is used as an example to show how the release and flow of fluids can be precisely controlled by the rotation speed of the CD. For cascade micro-mixing, a typical application is reconstituting lyophilized protein. A simple metering technique based on bubble snap-off in the two-phase flow is also described.

REFERENCE COUNT: 39 THERE ARE 39 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L10 ANSWER 52 OF 54 CAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 1999:577404 CAPLUS
DOCUMENT NUMBER: 131:308436
TITLE: Microfabricated Centrifugal Microfluidic Systems: Characterization and Multiple Enzymatic Assays
AUTHOR(S): Duffy, David C.; Gillis, Heather L.; Lin, Joe; Sheppard, Norman F., Jr.; Kellogg, Gregory J.
CORPORATE SOURCE: Gamera Bioscience, Medford, MA, 02155, USA
SOURCE: Analytical Chemistry (1999), 71(20), 4669-4678
CODEN: ANCHAM; ISSN: 0003-2700
PUBLISHER: American Chemical Society
DOCUMENT TYPE: Journal
LANGUAGE: English

AB This paper describes a microfluidic system in which fluids are pumped by centrifugal force through microscopic channels defined in a plastic disk in order to perform complex anal. processes. The channels are created either by casting poly(dimethylsiloxane) against molds fabricated by photolithog. or by conventional machining of poly(Me methyacrylate). The channels have a wide range of diams. (5 μm-0.5 mm) and depths (16 μm-3 mm). Fluids are loaded into reservoirs near the center of the disk, the disk is rotated on the shaft of a simple motor at 60-3000 rpm, and the fluids are pumped outward by centrifugal force through microfluidic networks. The control of flow in the time domain, i.e., gating, is achieved by the use of passive valves based on capillary forces. Flow rates ranging from 5 nL/s to >0.1 mL/s have been achieved using channels of different dimensions and different rates of rotation. The method of pumping is insensitive to many physicochem. properties of the liquid, such as pH and ionic strength, so it has been possible to pump biol. fluids, such as blood and urine, a buffer containing a detergent, and some organic solvents. A system that performs multiple (48) enzymic assays simultaneously using colorimetric detection on a dedicated instrument has been demonstrated. These integrated assays have been used both to yield the Michaelis constant (Km) of an enzyme and to determine the dose response of an enzyme to a drug. The fluid pumping and control embodied in this system may be readily integrated with other anal. components (e.g., heating, detection, and informatics) to form the basis for a microscale total anal. system for use in genomics, proteomics, high-throughput screening, and mol. diagnostics.

REFERENCE COUNT: 37 THERE ARE 37 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L10 ANSWER 53 OF 54 COMPENDEX COPYRIGHT 2007 EEI on STN DUPLICATE 13
ACCESSION NUMBER: 2000(16):3530 COMPENDEX
TITLE: Numerical and experimental study of capillary forces in trapezoid microgrooves.
AUTHOR: Sheu, Tsung-sheng (Natl Taiwan Univ, Taipei, Taiwan); Ding, Pei-Pei; Chen, Ping-Hei
MEETING TITLE: Proceedings of the 1999 Microfluidic Devices and Systems II.
MEETING ORGANIZER: SPIE
MEETING LOCATION: Santa Clara, CA, USA
MEETING DATE: 20 Sep 1999-21 Sep 1999
SOURCE: Proceedings of SPIE - The International Society for Optical Engineering v 3877 1999.p 295-302
SOURCE: Proceedings of SPIE - The International Society for Optical Engineering v 3877 1999.p 295-302
CODEN: PSISDG ISSN: 0277-786X
PUBLICATION YEAR: 1999
MEETING NUMBER: 56254
DOCUMENT TYPE: Journal
TREATMENT CODE: Theoretical; Experimental
LANGUAGE: English
AN 2000(16):3530 COMPENDEX
AB The evaporation of thin liquid films is of significant importance in a wide variety of heat transfer problems.The vaporization process of thin liquid films in a trapezoid microgroove channel was investigated both numerically and experimentally.In order to predict the wetted axial length of capillary flow in a trapezoid microgroove, the nonlinear governing equation was solved numerically and a simplified algebraic equation was also derived. The parameters include the input heat flux, tilt angle of grooved surface, thermophysical properties of working fluid, and geometric parameters of microgrooves.In order to investigate the effect of geometric parameters of microgrooves on the wetted axial length, a series of either trapezoid or triangular microgrooves was machined on the surface of copper test devices for experimental measurements.Measurements were conducted using either methanol or ethanol as working fluid at four different tilt angles of grooved surface and four applied input heat flux values.The wetted axial length was measured using microscopy observation.The predicted results of the algebraic equation are found to be in reasonable agreement with the experimental data, especially for cases of higher tilt angle or higher heat flux.Besides, using microgrooves of triangular shape or using methanol as working fluid can increase the wetted axial length of microgrooves.(Author abstract) 18 Refs.

L10 ANSWER 54 OF 54 INSPEC (C) 2007 IET on STN
ACCESSION NUMBER: 1999:6207708 INSPEC
DOCUMENT NUMBER: C1999-05-3260P-018
TITLE: Precise automated control of fluid volumes inside glass capillaries
AUTHOR: Daoura, M.J.; (Dept. of Electr. Eng., Washington Univ., Seattle, WA, USA), Meldrum, D.R.
SOURCE: Journal of Microelectromechanical Systems (March 1999), vol.8, no.1, p. 71-7, 10 refs.
CODEN: JMIYET, ISSN: 1057-7157
SICI: 1057-7157(199903)8:1L.71:PACF;1-A
Price: 1057-7157/99/$10.00
Doc.No.: S1057-7157(99)01445-6
Published by: IEEE, USA
DOCUMENT TYPE: Journal
TREATMENT CODE: Theoretical; Experimental
COUNTRY: United States

LANGUAGE: English

AN 1999:6207708 INSPEC DN C1999-05-3260P-018

AB A precise automated apparatus for controlling the position of small fluid sample volumes inside glass capillaries has been developed as part of an automated system for handling submicroliter reaction volumes for genomic analysis. The apparatus uses a linear charge-coupled device (CCD) array, dc motor, pneumatic pump, feedback controller, and a digital signal processor (DSP) to detect the menisci and control in real-time the position of fluid in a clear glass capillary with a resolution of 50 μm. This information is used to infer fluid volumes and control aspiration and dispensing to within 15 nanoliters depending on the inner diameter of the capillary. A computer simulation was developed to determine the effect of thick- and thin-walled capillaries on the detected signals. This simulation showed that, with a geometry appropriate for the overall automated system, a capillary with an inner diameter greater than 0.6 times the outer diameter is optimal to detect the presence of fluid inside the capillary. Thicker walled glass capillaries may be employed if a focusing lens is placed between the light source and the capillary. This result was verified experimentally